2014

SUSTAINABILITY
BENCHMARK REPORT
A Practice Greenhealth Member Benefit

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PRACTICE
Greenhealth®

2014 ENVIRONMENTAL EXCELLENCE AWARDS CIRCLES OF EXCELLENCE WINNERS

The coveted Circles of Excellence recognize outstanding achievers that excel in a given category, including Climate, Chemicals, Energy, Environmentally Preferable Purchasing, Food, Green Building, Greening the OR, Leadership, Waste, and Water. These awards are given each year to honor health care institutions for outstanding programs that reduce the facility's environmental footprint. Award winners were chosen using Practice Greenhealth's thorough scoring and evaluation system, based on the data each facility submitted for the 2014 Partner for Change Award

LEADERSHIP

Advocate Good Samaritan Hospital

Bon Secours Richmond Health System - St. Francis Medical Center

Bon Secours St. Francis Health System - St Francis Hospital Eastside

Fletcher Allen Health Care

Inova Alexandria Hospital

Inova Fair Oaks Hospital

Inova Fairfax Medical Center

Inova Loudoun Hospital

Madigan Army Medical Center

Magee-Womens Hospital of UPMC

WASTE

Beaumont Hospital, Royal Oak

Bon Secours Charity Health System - Bon Secours Community Hospital

Dartmouth-Hitchcock Medical Center

Fletcher Allen Health Care

Littleton Adventist Hospital

Metro Health Hospital

Ridgeview Medical Center

University Hospitals Ahuja Medical Center

University of Minnesota, Fairview West Bank

Yale-New Haven Hospital

CHEMICALS

Advocate Christ Medical Center & Advocate Children's Hospital-Oak Lawn

Bon Secours St. Francis Health System - St. Francis Hospital Eastside

Bon Secours Richmond Health System - St. Mary's Hospital

Dartmouth-Hitchcock Medical Center

Harborview Medical Center

Madigan Army Medical Center

Magee-Womens Hospital of UPMC

Ridgeview Medical Center

University Hospitals Case Medical Center

University of Maryland Medical Center

GREENING THE OR

Bon Secours Richmond Health System - St. Francis Medical Center

Cleveland Clinic

Dartmouth-Hitchcock Medical Center

Harborview Medical Center

Madigan Army Medical Center

Magee-Womens Hospital of UPMC

Providence St. Peter Hospital

Regions Hospital

Ridgeview Medical Center

University of Maryland Medical Center

FOOD

Beaumont Hospital, Royal Oak

Bon Secours Hampton Roads System - Mary Immaculate Hospital

Bon Secours Kentucky Health System - Our Lady of Bellefonte Hospital

Bon Secours Richmond Health System - St. Francis Medical Center

Fletcher Allen Health Care

Harborview Medical Center

Hudson Hospital and Clinics

Kaiser Permanente San Jose

Littleton Adventist Hospital

MedStar Good Samaritan Hospital

ENVIRONMENTALLY PREFERABLE PURCHASING

Advocate Good Shepherd Hospital

Advocate Trinity Hospital

Bon Secours Baltimore Health System - Bon Secours Hospital

Bon Secours Charity Health System - Bon Secours Community Hospital

Bon Secours Hampton Roads Health System - DePaul Medical Center

Bon Secours Charity Health System - Good Samaritan Hospital

Bon Secours Charity Health System - St. Anthony Community Hospital

Greater Baltimore Medical Center

Madigan Army Medical Center

Magee-Womens Hospital of UPMC

ENERGY

Advocate Illinois Masonic Medical Center

Bon Secours Charity Health System - St. Anthony Community Hospital

Bon Secours St. Francis Health System - St Francis

Hospital Eastside

Gundersen Health System

James E Van Zandt VA Medical Center

Kaiser Permanente Roseville Medical Center

Kaiser Permanente Vacaville Medical Center

NewYork-Presbyterian Hospital/The Allen Hospital

Providence St. Patrick Hospital

Virginia Mason Medical Center

WATER

Beth Israel Deaconess Medical Center

Elliot Hospital

James E Van Zandt VA Medical Center

Kaiser Foundation Hospital - Irvine

Kaiser Permanente San Jose

Lakewood a Cleveland Clinic hospital

Magee-Womens Hospital of UPMC

Ridgeview Medical Center

University of Minnesota, Fairview West Bank

University of Washington Medical Center

CLIMATE

Dartmouth-Hitchcock Medical Center

Evans Army Community Hospital

Gundersen Health System

Kaiser Foundation Hospital - Irvine

Kaiser Permanente Roseville Medical Center

Kaiser Permanente Santa Clara Medical Center

Kaiser Permanente South Sacramento

St. Clare Hopsital

St. Anthony Hospital

St. Joseph Medical Center

UCSF Medical Center / UCSF Benioff Children's Hospital

GREEN BUILDING

Cleveland Clinic

Gundersen Health System

Madigan Army Medical Center

Memorial Sloan Kettering Cancer Center

UCSF Medical Center / UCSF Benioff Children's Hospital

University of Washington Medical Center

Yale-New Haven Hospital

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Executive Summary

Practice Greenhealth is pleased to present the 2014 edition of the annual health care *Sustainability Benchmark Report*, highlighting the achievements of the 2014 award-winning facilities. This is the sixth consecutive year we have published the report and we are proud to have worked alongside our members to establish a set of leading indicators for health care sustainability performance. This report provides the nation's most comprehensive analysis of how hospitals are progressing in their commitment to environmental stewardship—a quest that has even greater meaning as the sector struggles with defining methods to support population health, and as there is better scientific clarity on the links between environmental exposures, chronic diseases and cancer.

The report provides access to comprehensive data that highlights how environmental stewardship programs were being integrated at member health care institutions in 2013. This year's report is organized into ten separate benchmarking profiles on the different topic areas that make up a hospital environmental stewardship program—leadership, waste, chemicals, greening the operating room, food, environmentally preferable purchasing (EPP), energy, water, climate and green building.

The report is designed to help member institutions assess how they compared to other engaged hospitals in this arena. From improvement within surgical suites to leadership infrastructure to supply chain engagement, this report will support hospitals in identifying both sustainability program opportunities as well as progress to their respective teams and colleagues.

The *2014 Sustainability Benchmark Report* includes activities reported by 223 winners of the Greenhealth Partner for Change Award, Greenhealth Emerald Award and the Top 25 Environmental Excellence Award. These and other awards were presented to 305 recipients at CleanMed 2014 in Cleveland, Ohio. This year's data set is based on reported activities during the 2013 calendar/fiscal year.

New this year—Practice Greenhealth changed the Partner for Change Award scoring system to rely in part on the calculation of 21 different sustainability performance metrics. We recognize that as environmental stewardship becomes a more standardized part of health care operations, there is a need to standardize the measurement of sustainability performance for the sector. These 21 metrics are highlighted across the report in six different categories.

The 2014 report presents the nation's most robust data set yet on greening practices in operating rooms (ORs)—including the introduction of four different metrics to measure sustainability performance in the OR. The report highlights data from 3,442 ORs and showcases how hospitals have begun to target this area because it generates so much of the environmental impact of the facility.

And perhaps equally (or more) critical for health care leadership during sector-wide reform, this report again provides evidence that environmental stewardship programs not only support health and employee engagement, but also provide substantive cost savings back to the institution.

TABLE 1: SAVINGS TABLE

Dollar Savings:	Amount of Waste Prevented	Dollars Saved
Energy	1.85% of energy used	$25 million
Recycling	102,000 tons	$28 million
Total SUD savings and other OR savings (HVAC, kit reformulation, etc)	1374 tons	$39.1 million
SUD savings outside the OR	228 tons	$17.3 million
Water	275 million gallons saved	$1.1 million
Solvent distillation	136 tons	$540 thousand
Total Savings	**103,378 tons waste** **275 million gallons** **1.85% energy use**	**$111 million**

Learn more about how your facility performs against Practice Greenhealth's award-winning data set. Identify your opportunities for continuous environmental improvement while also gleaning insights on some of the most successful strategies to drive that improvement.

In response to member feedback, the report has been broken into ten distinct toolkits for focused understanding and utilization of the data set. If, however, there is a specific data point from the Partner for Change Award application that is of interest and has not been reported, please contact your Practice Greenhealth liaison or Cecilia DeLoach Lynn, Director of Facility Engagement & Metrics, for additional information at cdeloach@practicegreen-health.org.

Introduction

This year's report again provides an analysis of health care environmental performance by institutional size—primarily by the number of staffed beds instead of square footage. Energy and water metrics continue to use square footage as the primary normalizer. The report presents a range of normalizing data to help you understand your hospital's progress while taking into account the variance of patient census.

The Data

The data presented in this report was analyzed by Informing Ecological Design, LLC (www.iecodesign.com). Their statistical team worked closely with Practice Greenhealth staff to review the data submitted and remove outliers before using statistical methods to analyze the cleaned data. For data we wished to normalize, the teams worked together to select a set of normalizing measures that best correlated with the data to support more informative comparisons among hospitals (such as RMW per patient day or gallons of water used per square feet).

Generally, the tables in this report present the percent of respondents answering in the affirmative for a given question (for example, the percent of hospitals that indicated they have developed a green revolving fund, or use reusable sharps containers). Some of the data tables highlight the median[1] value for a data set (pounds of RMW generated per patient day). In past reports, Practice Greenhealth used the average rather than the median value. However, medians and percentiles were used this year as these values typically provide a stronger basis for comparisons and benchmarking than averages and standard deviations.

New this Year

For some data presented in the tables below, readers will notice a column labelled "90th Percentile." This column identifies the median of those facilities performing at the top of the data range—the best of the best. This data is provided so member institutions can not only understand their performance relative to the median, but can also understand how well health care institutions can perform relative to particular metrics so they can better assess how much opportunity is available for each particular program.

For yes/no, drop-down or multi-select questions where a 90th percentile was not possible to calculate, readers may note a Top 25 column, which highlights what percent of the Top 25 winners answered in the affirmative (e.g., a column showing that 100 percent of Top 25 winners indicated they have appointed an Executive Champion to provide administrative support for environmental stewardship).

Energy consumption data is again presented in detail with a focus on building size and the climate zones defined by the Commercial Building Energy Consumption Survey (CBECS). This allows the analysis to consider not only energy-use improvements but also to understand those improvements in the context of regional climate zones and building size. The use of this normalizing data allows for a meaningful comparison of energy consumption across the United States.

We invite you to review the new data set and identify useful benchmarks for your facility. Your Practice Greenhealth liaison can help you identify opportunities and support the goal-setting process. And we hope you will consider participating in the 2015 Environmental Excellence Awards or one of our other initiatives to support member benchmarking of environmental performance. A special thanks to all of the health care institutions that invested their time in completing award applications in the 2014 awards season. We look forward to learning more about how this report supports your sustainability journey.

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1   Median: In statistics and probability theory, the median is the numerical value separating the higher half of a data sample, a population, or a probability distribution, from the lower half.

The Data Set

The data set includes 223 hospitals that submitted the 2014 Partner for Change Award application and won Greenhealth Partner for Change (PFC), Greenhealth Emerald, or Top 25 Environmental Leadership Awards. The data extracted from the 2014 applications is from calendar/fiscal year 2013. All facilities in the data set have overnight beds and operating rooms. To best facilitate member comparison, this report breaks the data into several cohorts, including a comparison of all, small, large and in some cases—the Top 25 hospitals, where there is a particularly interesting data point.

Hospitals with less than 200 beds are grouped in the "small hospitals" data set and hospitals with more than 200 beds are grouped in the "large hospitals" data set. Top 25 refers to the winners of the Top 25 Environmental Excellence Award, Practice Greenhealth's premier award for outstanding all-around leadership in environmental performance. This separation maintains a statistically significant number of members in each group for analysis. Both of these subsets were included in the "All" data set. For example, the median square footage of "All Hospitals" is 908,914, while the median smaller hospital is 387,207 square feet and the median larger hospital is 1,381,571 square feet.

The data set includes hospitals of all sizes, types and locations across the country. The hospitals analyzed in this data set range from less than six staffed beds to over 1,500, including small critical access hospitals (CAHs) in rural locations and large, academic medical and research centers that treat the country's sickest patients. Practice Greenhealth continuously reviews the data set for opportunities to draw new inferences based on these different cohorts of hospitals.

This year, Practice Greenhealth used median (middle of the range) data points to highlight member performance instead of average, as it had a much higher statistical correlation than average. Every year, Practice Green-

health works with an outside statistical firm to "clean" the data set—looking for outliers and incorrect data. The use of median rather than mean provides a more statistically robust look at how the data clusters rather than accounting for the "tail" ends of the data set, which can drag down (or up) the average. Data set medians for the normalization factors used in the 2014 awards season are presented in Table 2 below. These factors are defined and explained in the Normalization of Data section of this report.

TABLE 2: THE DATA SET

PFC Data Set	Sample Size
Smaller Hospitals (<200 staffed beds)	106
Larger Hospitals (>200 staffed beds)	117
All Hospitals	223
Top 25	25
Data Set Statistics - All Hospitals	**Median**
Staffed Beds	273
Patient Days	73,035
Adjusted Patient Days	124,133
Number of ORs	15
Full-time Equivalents (FTEs)	2,486
Square Feet	908,914

How to Interpret the Data Tables

Most data tables have four colored column headers: the first (darker shading) data column shows a median value for all 223 hospital winners, the second column shows data for the 106 hospitals with less than 200 staffed beds, and the third column shows data for the 117 hospitals with greater than 200 beds. The fourth blank column has been added for your convenience to enter your hospital's data for comparison. Some tables will also have a column highlighting the 90th percentile performance or the

percentage of Top 25 winners reporting they have implemented the program.

Any member organization who completes the Partner for Change application receives a Metrics Report Card that demonstrates the individual facility's performance on 19 of the metrics measured within the award application. The Sustainability Benchmark Report allows any member (regardless of whether they completed an award application) to go deeper into the data set and explore how they compare on a wider range of programmatic activity areas.

TABLE 3: DATA SET BY FACILITY TYPE

Hospital Type	Number of Small Hospitals	Number of Large Hospitals
General Acute Care	106	113
Children's	0	0
Oncology	0	1
Specialty - Cardiac	0	3
Specialty Womens	0	1
Critical Access Hospital	16	4
Academic Medical Center	18	59
Hospitals with Onsite Research	5	40

Surprisingly, Practice Greenhealth has a fairly homogeneous data set. Other than differences in the size of the facility—most are acute care hospitals and 34.5 percent are academic medical centers. When comparing metrics performance, Practice Greenhealth has heard facilities talk about how their site is "different." This data should reassure hospitals that the data set is valid for their facility type. If you have questions about where your institution fits into this data set, reach out to your Practice Greenhealth liaison for more information.

Normalization of Data

In order to effectively compare data between hospitals, or even to compare one hospital's data from year to year, most data must be normalized. Because patient census can change dramatically from one year to the next and because it is unreasonable to compare the total tons of waste from an 850-bed hospital with that of a 75-bed hospital, Practice Greenhealth uses normalizing data to help identify comparable metrics. The idea is to determine how characteristics that one is interested in (waste generation rates, energy consumption or water use) are affected by certain variables (such as patient days, staffed beds, number of operating rooms, or square footage). Normalizing the data allows one to look at each variable (such as patient days) that may affect the characteristic of interest (waste generation) individually, while holding the other variables constant (beds, number of operating rooms and square feet). These variables are referred to as normalizing factors in this report.

Each year, Practice Greenhealth conducts a search for the best normalization factors using statistical analysis. Multiple regression techniques identify which normalizing factors correlate best with the characteristic of interest—providing a clearer picture of which factors most strongly affect the data. Some of the normalization factors correlate well with the data and some do not, because some variables affect the characteristics we are interested in more than others (e.g., the number of staffed beds more strongly influences waste generation rates than the number of outpatient visits). Regression techniques identify which variables are considered the best "predictors" for a given characteristic. For example, in 2014 it was determined that number of operating rooms was the best normalization factor, or predictor, of total waste generation, with an R^2 value of 0.92, which is very good (1.0 would be a perfect correlation). This means that the number of ORs can explain 92 percent of the variation in waste generated.

Presentation of Data

Normalized data (such as total pounds of waste per patient day) is generally presented in the tables in order of decreasing correlation; the best normalization factor or predictor (such as patient days for waste generation) is presented first, followed by the next best predictor, (such as staffed beds).

In the past, Practice Greenhealth has utilized adjusted patient days (APD), patient days, or other variables as "favored" normalization factors. Regression analysis of the data this year identified five factors (out of the nine characteristics presented in the next section, below) that correlate well with (or can be used to best predict) the characteristics of interest (waste, energy, water). These include:

- **Adjusted Patient Days (APD)**
- **Patient Days**
- **Number of Operating Rooms/Suites**
- **Full Time Equivalents**
- **Square Feet**

Normalization Factors

The list below includes the nine normalization factors considered in the regression analysis used to interpret the data set presented in the 2014 report. Table 2 on page 5 presents median values for each factor. It should be mentioned that the appropriate normalization factor should be selected based on three considerations—meaningfulness, comparability, and availability. Practice Greenhealth has used factors that are commonly used and readily available in the industry.

Normalization Factors

▸ **Adjusted patient days:** Adjusted patient days (APD) take into account inpatient and outpatient activity and are generally calculated as:

APD = (Total patient days)*(Total patient revenue/inpatient revenue); where total patient revenue = inpatient + outpatient revenue.

▸ **Patient days:** Each patient day represents a unit of time during which the services of the institution or facility are used by a patient; thus 50 patients in a hospital for one day would represent 50 patient days.[1]

▸ **Staffed beds:** Staffed beds are those in-service and patient-ready for more than half of the days in the reporting period. Staffed beds does not include beds ordinarily occupied for less than 24 hours, such as those in the emergency department, clinic, labor (birthing) rooms, surgery and recovery rooms and outpatient holding beds.

▸ **Licensed beds:** The maximum number of beds a hospital is licensed to staff**.**

▸ **Employees:** Practice Greenhealth uses the term *"full-time equivalents"* or *"FTEs"* in the report to designate the number of staff at a facility.

▸ **Operating rooms:** The number of operating rooms at a facility is a relatively easy variable to account for, and does not typically change throughout the year.

▸ **OR procedures:** The number of OR procedures indicates how busy a facility's ORs were over a given year.

▸ **Number of ER visits:** The total number of patients seen in an emergency unit who were not later admitted as inpatients. However, this number did not present as a good indicator.

▸ **Square footage:** Square footage provides data on how large a facility is and can be an excellent normalization factor when looking at energy data and cost. Square footage also indirectly takes into account both inpatient and outpatient activity.

▸ **Case mix index:** This year's data was also analyzed for case mix index, a measure of how sick the patients are. While we anticipated a good correlation for RMW or waste, case mix index was not observed to be a good predictor of any variable of interest.

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1   Patient day. (n.d.) *Mosby's Medical Dictionary, 8th edition.* (2009). Retrieved January 27 2015 from http://medical-dictionary.thefreedictionary.com/patient+day

Engaged Leadership

Most sustainability initiatives start as grassroots efforts. Every hospital has individuals that have taken it upon themselves to reduce waste, donate materials or turn off the lights. However, grassroots efforts can only get a hospital so far. Engaged leaders recognize and support sustainability initiatives for their myriad benefits—fiscal responsibility, alignment with mission, an employee recruitment/engagement/retention strategy, community benefit, and an advantage for quality patient care.
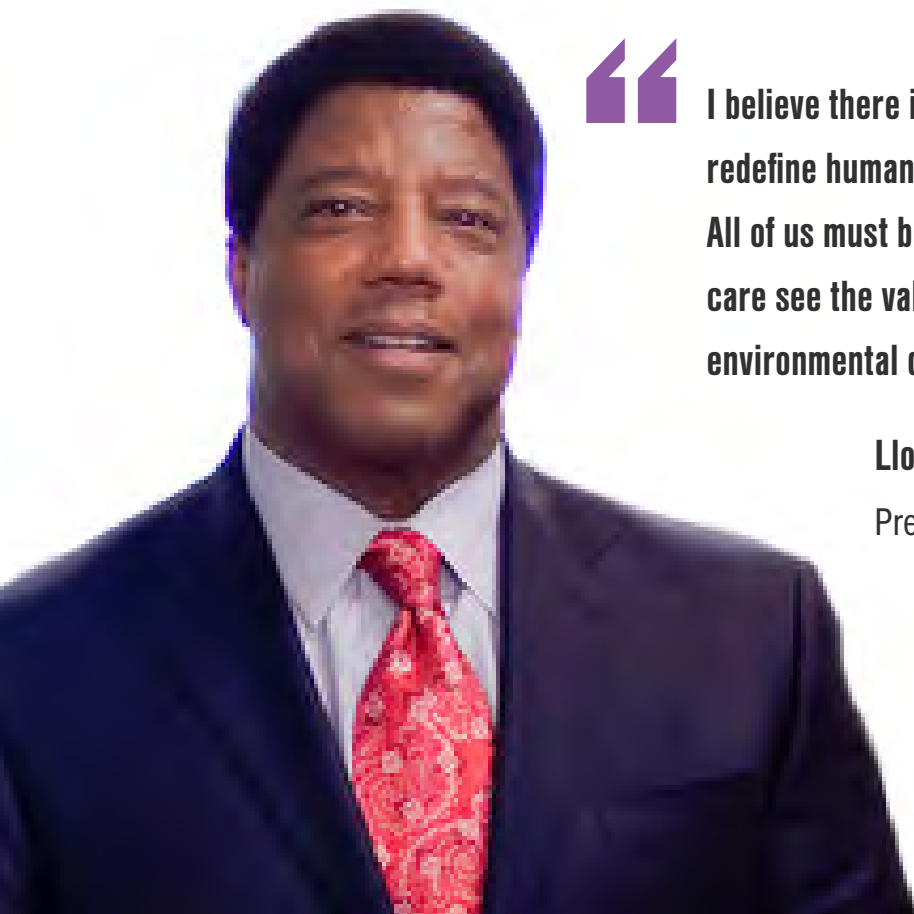
> I believe there is nothing more important than the work to redefine human health to include a healthy environment. All of us must be advocates to help leaders in health care see the value of sustainable practices and to see environmental quality as preventive care.

Lloyd Dean

President and CEO, Dignity Health

Practice Greenhealth has identified a series of qualitative measures that, with support from leadership, can create a firm foundation and structure for environmental stewardship that helps programming endure for the long term. The qualitative measures below are separated into four sections – Infrastructure, Human Resources, Finance and Reporting, and Communication. It's not a coincidence that the Top 25 Environmental Excellence Award winners scored extremely high on the leadership section of the award application. Every hospital can benefit from an ongoing commitment to furthering leadership engagement in this arena. Of the four areas that Practice Greenhealth looked at in regards to leadership, Human resources (HR) offers the biggest opportunity for improvement. Learn more about how effectively Practice Greenhealth award winners are engaging their leaders around environmental stewardship.

Infrastructure for Environmental Stewardship

A successful environmental stewardship program is dependent on developing a process to facilitate program implementation. This year's benchmarking results tell us that just about every award-winning institution has a leader or team coordinating and/or directing their sustainability activities. Eighty-eight percent of award-winning hospitals had appointed or hired someone to lead sustainability work in 2013—up from just 33 percent in 2009. And 48 percent of award-winning facilities now have a *full-time* person overseeing sustainability activities at either the hospital or health system level. The percentage of facilities with an executive champion has also continued to grow—to 92.4 percent in 2013.

TABLE 1: LEADERSHIP FOR ENVIRONMENTAL STEWARDSHIP

Leadership for Environmental Stewardship	All	Small	Large	Top 25	Your Data
Has the facility appointed an executive champion to provide administrative support for environmental stewardship?	92.4	92.5	92.3	100.0	
Has the facility established a green team/sustainability committee (or did it utilize an existing committee) for ownership/oversight of designing, implementing and reporting on environmental sustainability initiatives?	98.7	98.1	99.1	100.0	
Has the facility appointed or hired someone to lead sustainability efforts across the organization?	88.8	88.7	88.9	100.0	
Has the facility identified a clinical champion(s) to lead efforts on clinical engagement and education?	66.4	66.0	66.7	96.0	

Beyond staffing and program management, there are three other key areas where leading hospitals are focusing their infrastructure development. Establishing a commitment or policy to support environmental stewardship is often a foundational step. Conducting a baseline assessment is critical to an accurate assessment of opportunities. And a strategic sustainability plan demonstrates the facility has gone beyond a random array of sustainability programs, to do the work needed to align environmental stewardship efforts with other organizational priorities and determine a process for measuring progress. Award-winning facilities are clearly making these a priority and for the Top 25, they almost appeared to be a mandate.

TABLE 2: COMMITMENT COMPONENTS

Commitment Components	All	Small	Large	Top 25	Your Data
Has the facility established an organizational environmental commitment statement/principles/charter for integrating environmental sustainability that is approved by top leadership?	77.1	73.6	80.3	100.0	
Has the facility conducted a sustainability baseline assessment?	84.8	82.1	87.2	100.0	
Has the facility created a strategic sustainability plan that aligns with other organizational priorities or embeds sustainability objectives or goals within the overall strategic plan?	61.0	64.2	58.1	92.0	

Human Resources

Creating a culture of health requires the engagement of every staffer. It starts with the interview, job description, and employee orientation, and persists using ongoing education and engagement techniques. On the sustainability front, even top-performing hospitals still have more to learn about how to engage human resources in supporting the integration of environmental stewardship into the culture of the organization. There are also key linkages to be explored with employee wellness initiatives.

More and more, hospitals with an environmental stewardship commitment are formalizing accountability for these programs—with just over 40 percent of hospitals building sustainability measures into the evaluation process. At a nearly 30 percent increase, 68 percent of the Top 25 hospitals had built in accountability for sustainability measures. And with the industry-wide high levels of turnover in both support services and nursing staff, training employees on sustainable practices and expectations during orientation can ensure they can add value to these programs from the get-go. Hospitals can gain considerable leverage in their sustainability programs by engaging HR and prioritizing the actions below.

TABLE 3: HUMAN RESOURCES

Human Resources	All	Small	Large	Top 25	Your Data
Has the facility added sustainability measures for leadership staff into performance objectives/evaluations?	41.7	41.5	41.2	68.0	
If yes, is executive compensation tied to these objectives?	66.7	72.7	65.3	47.1	
Has the facility added language to job descriptions on the organization's commitment to the environment and the role that each employee plays?	15.2	14.2	16.2	36.0	
Has the facility included an overview of organizational sustainability goals in new employee orientation?	63.1	63.8	62.4	88.0	
Has the facility included questions about the sustainability/environmental stewardship program in its employee engagement/satisfaction survey?	17.9	13.2	22.2	40.0	

Finance and Reporting

It can sometimes be challenging to go beyond "it's the right thing to do" to making the business case for new programs. Not all sustainability leaders will have an MBA, but it is important to know enough about health care finance to be able to develop a strong business case for environmental stewardship activities. Understanding return on investment (ROI), payback periods, and project financing elements such as rebates and incentives is critical to success. Likewise, ensuring that there is accountability and a reporting hierarchy for sustainability activities will help embed these programs as valid business priorities.

Nearly 46 percent of award-winning facilities now have sustainability program budgets–with 72 percent of the top performers stating they have sustainability program budgets. The ability to budget in advance for these programs rather than fight real-time for capital can make a significant difference in getting these programs in place. Green revolving funds (GRFs) are also gaining ground, and can be an important factor in funding green programs (see sidebar).

TABLE 4: FINANCE

Finance	All	Small	Large	Top 25	Your Data
Has the facility calculated and delineated a payback period/return on investment (ROI)/internal rate of return (IRR) for sustainability activities that have up-front costs as part of program development process?	63.5	58.1	68.4	96.0	
Has the facility formulated a sustainability program budget?	45.7	45.7	45.7	72.0	
Has the facility developed a green revolving fund?	17.6	14.4	20.5	28.0	

As momentum around the integration of environmental stewardship activities continues to grow, a subtle shift has occurred. Not only are communities, shareholders, executive leadership and Boards asking "Are we integrating these kinds of programs?," but the question is shifting to "How well are we integrating these kinds of programs at our organization?" And the emphasis on transparency and public reporting is directly linked. Today, 95 percent of the 250 largest companies in the world produce a sustainability report—with four out of five of those companies publicly reporting through the Global Reporting Initiative (GRI) (www.globalreporting.org). In health care, a commitment to sustainability reporting is increasing, but is an opportunity area for most hospitals. Even top-performing hospitals have an opportunity for improvement in public reporting. Often, hospitals are shy when it comes to touting their successes, due to the concern that the media may focus on their shortcomings. Transparency and goal-setting can both reveal challenges, and also demonstrate a true commitment to continuous environmental improvement. The more hospitals articulate their challenges, the more opportunities there are to work together and address shared obstacles.

Within the award-winning hospitals, 22 reported that their organization had developed a sustainability report using GRI guidelines. Another 25 reported their organizations had also developed a formal sustainability report. While still a small subset of the whole, there is growing interest in this area. And while the percentage of facilities reporting environmental stewardship activities to the IRS through community benefit reporting dropped slightly from last year (76 percent to 59.4 percent), organizations like Practice Greenhealth and the Catholic Health Association continue to support health care institutions in understanding these linkages—especially as the term population health is used more frequently. Learn more about how hospitals are tying this work to community benefit reporting in the Catholic Health Association's Guidelines for Reporting Environmental Improvement Activities as Community Benefit and Community Building to the Internal Revenue Service.

INNOVATION IN ACTION
Green Revolving Funds (GRFs)

A GRF is an internal fund that provides financing to parties within an organization to implement energy efficiency, renewable energy, and other sustainability projects that generate cost-savings. These savings are tracked and used to replenish the fund for the next round of green investments, thus establishing a sustainable funding cycle while cutting operating costs and reducing environmental impact.

There are several advantages to GRFs that outweigh the one-time investment strategy. Revolving funds build the business case for sustainability, engage and educate institutional stakeholders, convey reputational benefits, and create fundraising opportunities in a way that conventional investments do not. The uptick in GRFs is happening primarily in the academic sector, for starters—though several health care organizations are building and/or utilizing these funding mechanisms including Spectrum Health, Bon Secours Health System and Yale-New Haven Health System.

These funds regularly achieve high financial returns, with a median return on investment of 28 percent annually. Learn more about the benefits of building a GRF by reading:

Green Revolving Funds: An Introductory Guide to Implementation & Management

A co-publication of the Sustainable Endowments Institute & the Association for the Advancement of Sustainability in Higher Education

Reporting	All	Small	Large	Top 25	Your Data
Has the facility implemented a sustainability reporting structure (e.g., making certain positions accountable for reporting sustainability progress up the organizational hierarchy)?	76.1	78.1	74.4	88.0	
Has the facility implemented annual sustainability reporting to the Board of Directors/Trustees?	68.6	76.4	61.5	92.0	
Does the facility report sustainability initiatives within its community benefit report to the IRS (for non-profit organizations) through IRS Schedule H, Form 990?	59.4	59.6	59.2	81.0	
Does the facility write a publicly available annual report that details environmental stewardship accomplishments?	51.6	52.8	50.4	72.0	

Communication and Community Connections

Engagement often comes down to communication strategies. Surveys have shown that sustainability initiatives require explanation. Hospitals cannot expect staff to understand why certain environmental initiatives are important, especially in relation to what appear to be competing priorities. An innovative approach will use posters, newsletter articles, web pages, competitions and creative strategies to educate and engage the staff. As Harvard University explains, "It's not enough to serve a local apple. We have to explain WHY we are serving a local apple."

Sustainability programs often start by communicating first to staff, then to patients and finally to the community.

It takes time and a coordinated strategy, but leading hospitals recognize that their commitment to healthier environments is part of who they are and how they want to be viewed in the eyes of their communities. Presenting at conferences, mentoring other hospitals, participating in interviews with the media and hosting regional events are all ways that a hospital can demonstrate leadership. Table 6 below highlights how award-winning hospitals are using different communications strategies to engage their staff, patients and communities. Use these ideas to talk to your marketing and communications teams about the best influencers for your target audience.

> **We recognize that sustaining the health of the environment is critical to preserving human health. We consider conservation of resources, both natural and monetary, as fundamental to our mission of delivering quality health care to the communities we are privileged to serve.**
>
> **Jim Skogsbergh**
> President and CEO, Advocate Health Care

TABLE 6: COMMUNICATION AND COMMUNITY CONNECTIONS

Communication and Community Connections	All	Small	Large	Top 25	Your Data
Has the facility developed a Leadership Walks, Talks and Envisions statement for a C-level executive within the organization?	13.9	8.5	18.8	40.0	
Has the facility communicated sustainability goals and progress from the leadership team to the staff at least annually?	72.2	72.6	71.8	92.0	
Has the facility developed education and communication strategies to convey the organization's sustainability initiatives?	86.9	85.8	87.9	100.0	
Does the facility display visuals to patients (such as segregation signage, posters, lanyards) describing organization's environmental commitment?	74.8	72.4	76.9	96.0	
Does the facility include a question about sustainability in its patient satisfaction survey?	0.9	1.0	0.9	0.0	
Does the facility educate the community on environmental topics? (Provide information on proper medication disposal when issuing prescriptions or link human health to global warming.)	73.0	75.5	70.7	96.0	
Does the facility include sustainability components in local or national marketing or educational campaigns?	40.5	44.2	37.1	68.0	
Did the facility share its environmental sustainability successes in a media story?	73.1	73.6	72.6	88.0	
Did the facility feature a sustainability topic connecting health and the environment in at least one grand rounds event this year?	19.8	18.1	21.4	56.0	
Did the facility present publicly on the organization's sustainability efforts in 2013?	66.1	62.9	69.0	88.0	
Did the facility provide mentoring to other hospitals either within the health system or externally?	73.8	74.3	73.3	100.0	
Did the facility work with city government or local organizations to promote sustainability locally or plan a local event (like clean air days, drug or electronic take-back events)?	77.6	82.1	73.5	92.0	

" Kaiser Permanente's mission is to improve the health of our members and communities we serve. To make that a reality, our efforts at prevention, fostering wellness, and building healthy communities must take into consideration the work of creating healthy environments. "

Raymond J. Baxter, PhD

Senior Vice President, Community Benefit, Research and Health Policy, President, Kaiser Permanente International

> **"** For us, it's natural, since this work fits hand-in-hand with our mission of improving the quality of life of every patient who enters our door. **"**

Tim Fetter
President and Chief Executive Officer,
Tenet Healthcare Corporation

One interesting take-away from this data was the percentage of facilities that had engaged clinical staff through a grand rounds event on sustainability. Engaging clinicians–especially physicians—can be challenging. Using this existing physician education forum to share some examples of how other sites are working with their physicians to make changes that benefit patients, staff and community health can be a very effective engagement strategy. Top 25 hospitals were 36 percent more likely to use this strategy than other award-winning institutions (56 percent vs. 19.8 percent for all hospitals).

Another highlight to call out is the specific vehicles that hospitals are using to communicate to staff, patients and the community.

TABLE 7: COMMUNICATION STRATEGIES

Has the facility developed education and communication strategies to convey the organization's sustainability initiatives?

Of the 193 facilities indicating "yes," these strategies were identified:	All	Small	Large	Top 25
Internal web page for staff	82.9	78.0	87.3	96.0
Public web page	59.1	53.9	63.7	76.0
E-learning modules	42.0	47.3	37.3	68.0
Newsletter	68.9	63.7	73.5	88.0
Poster campaign	54.4	50.6	57.8	72.0
Other	40.9	37.4	44.1	44.0

For more examples of exemplary Practice Greenhealth member materials, see the Hospital Member Toolkit.

"At Gundersen Health System, we believe health care organizations need to be honest with themselves and 'look in the mirror' when it comes to environmental factors that affect human disease."

Jeff Thompson, MD
Chief Executive Officer,
Gundersen Health System

Less Waste

Improved waste and material management is typically one of the first areas tackled within a sustainability focus. While all award-winning hospitals are recycling, key areas of advancement are smarter pharmaceutical waste management—including controlled substances; operating room plastics recycling and waste prevention.

Award-winning hospitals prevented 102,000 tons of waste from going to the landfill, and saved $28 million by recycling in 2013.

Key to understanding your organization's waste management effectiveness is understanding your waste profile. Waste types (in tons) as a percent of total waste are shown in Table 1. The breakdown of waste costs are shown in Table 2. Comparing the two tables demonstrates that certain waste streams–such as RMW—may be a fairly small percentage of total waste (seven percent) but can comprise a large percentage of cost (43 percent). Recycling on the other hand comprises 31 percent of waste in the typical award-winning hospital while generating only 11 percent of total cost. Quick diagnostics like this can easily convince leadership that RMW reduction and recycling programs make good business sense.

When reviewing benchmarks, look to the Top 25 facilities and the 90th percentile performers when setting long-term goals, but aim to get there in increments.

Notable in this year's report:

▶ Award-winning hospitals diverted 101,906 tons from the landfill through recycling, resulting in over ten million dollars worth of avoided solid waste fees and over $18 million in avoided hazardous waste disposal fees for recycled universal waste.

▶ Median recycling rates stayed steady at 31 percent.

▶ The percent of RMW decreased significantly–from nine percent to seven percent this year. Some fluctuation is likely due to the transition from average to median this year (discussed previously), but also points to continued progress in this arena.

▶ The percent of total cost of RMW also increased this year–from 37 percent to 43 percent of total cost.

TABLE 1: WASTE GENERATION AS A % OF TOTAL WASTE

Waste Generation as a % of Total Waste	All	Small	Large	Top 25	90th %	Your Data
Percent solid waste (in tons)	62.0	62.0	63.0	60.0	45.0	
Percent recycling (in tons)	31.0	32.0	28.0	33.0	47.0	
Percent RMW (in tons)	7.0	6.0	8.0	6.0	4.0	
Percent hazardous waste (in tons)	0.4	0.4	0.4	0.4	0.1	

TABLE 2: WASTE GENERATION AS A % OF TOTAL WASTE COST

Waste Generation as a % of Total Waste Cost	All	Small	Large	Top 25	Your Data
Percent solid waste cost ($)	29.8	29.6	30.5	34.6	
Percent recycling cost or revenue ($)	10.4	11.7	9.9	9.0	
Percent RMW costs ($)	40.3	40.0	40.4	39.3	
Percent hazardous waste costs ($)	12.6	11.0	13.9	8.2	

Waste Breakdown

FIGURE 1: AVERAGE WASTE COST PROFILE

- Percent solid waste cost ($) — 29.8%
- Percent recycling cost or revenue ($) — 10.4%
- Percent RMW costs ($) — 40.3%
- Percent hazardous waste costs ($) — 12.6%
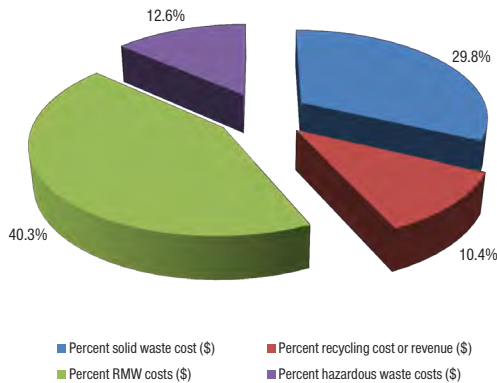
FIGURE 2: AVERAGE WASTE PROFILE

- Percent solid waste (in tons) — 62%
- Percent recycling (in tons) — 31%
- Percent RMW (in tons) — 7%
- Percent hazardous waste (in tons) — 0%
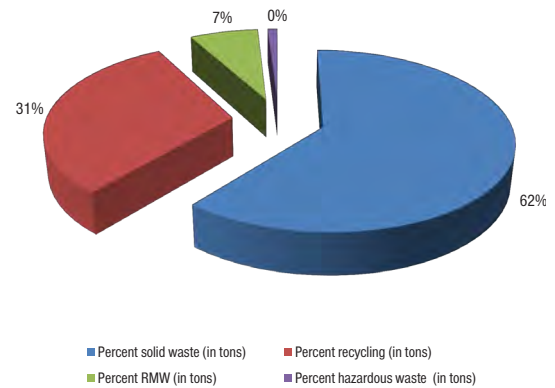
Hospitals use a range of different normalizing factors to normalize the fluctuation in waste generation rates. The tables below highlight the best normalization factors for each waste types—factors with the highest correlation listed first. Regression analysis tells us which normalizers are the best predictors for a given waste type (or other variable, like energy or water consumed). For example, square feet is consistently the best predictor for (or correlates the best with) the amount of energy a hospital uses, since no matter how busy a hospital is, the majority of the space has to be heated and cooled. Case mix index, a measure of how sick the patients are, has a very low correlation with how much energy is used, which tells

us that having higher acuity patients doesn't necessarily mean organizations use significantly more energy to treat those patients.

Solid Waste

Solid waste in most health care organizations goes directly to the landfill, where it generates methane and contributes to greenhouse gas emissions. The end goal is to decrease the volume of solid waste by two mechanisms–increasing recycling and reducing the total amount of waste generated through products or processes that produce less waste (such as source reduction).

TABLE 3: SOLID WASTE

Solid Waste	All	Small	Large	Top 25	Your Data
Total tons of solid waste per OR	54.08	45.81	59.91	55.94	
Total pounds of solid waste per patient day	26.77	308.00	25.18	24.05	
Total pounds of solid waste per square foot	2.02	1.88	2.18	1.00	
Total pounds of solid waste per adjusted patient day (APD)*	13.49	12.89	13.74	12.91	

*Because many Practice Greenhealth members utilize adjusted patient day (APD) as a normalizer, we have included it, and it correlated nearly as well as square feet.

As recycling rates begin to plateau for many organizations, the focus turns to waste reduction and prevention efforts. Some key ways hospitals are addressing waste prevention are noted in Table 4. These types of waste reduction and prevention programs are on the radar of most award-

winning hospitals, as illustrated by the high percentages of participation.

Waste Reduction & Prevention	All	Small	Large	Top 25	Your Data
Has the facility developed an internal reuse program or strategy for office supplies, clinical products and equipment, and furniture before making these materials available for external donation?	93	89	97	96	
Has the facility developed an equipment and supplies donation program (domestic or abroad) for materials, equipment and furniture that can no longer be used internally?	91	88	93	92	
Does the organization ensure all donated medical supplies, equipment and electronics are actually needed, such as working with an organization that ensures the needs of developing countries are met with the donated items?	78	78	78	88	
Has the facility implemented a paper reduction program?	85	83	87	100	

Recycling

Hospitals continue to glean new opportunities for recycling despite decreasing margins on smaller volume materials. This year's top performers (top 10 percent or 90th percentile performers) recycled an impressive 47 percent of their waste streams while the recycling rate for all award-winning hospitals stayed constant at 31 percent.

▶ Award-winning hospitals reported diverting nearly 100,000 tons of solid waste, avoiding over $10 million dollars in solid waste costs.

▶ Award-winning hospitals reported recycling 3,718 tons of universal waste, avoiding $18.7 million dollars in hazardous waste costs.

This equates to more than 10,413 trash trucks worth of material being diverted from the landfill!

Recycling normalization factors are listed below beginning with the best correlation. Recycling does not appear to correlate well with either adjusted patient days (APD) or patient day—showing that patient volume is only one factor in determining recycling rates at hospitals.

Recycling	All	Small	Large	Top 25	90th %	Your Data
Total tons of recycling per OR	25.90	23.80	27.70	28.30	53.6	
Total pounds of recycling per square foot	0.95	1.00	0.93	1.24	2.12	
Total tons of recycling per FTE	0.20	0.24	0.18	0.19	0.38	
Total pounds of recycling per APD	6.30	6.80	6.00	6.80	16.6	
"Total pounds of recycling per patient day"	13.40	15.90	10.60	13.60	31.2	

Do you know where your recycling goes? Increasingly, there are stories of recycling loads being rejected at the municipal recycling facility (MRF) or the transfer station. Chain of custody audits are important. As the legally responsible party, you need to know where your waste and recycling is going and the final disposition of this material. Is the material recycled? Where? What is it turned into? Some materials are trickier to find a market for, and contamination/improper segregation can render an entire load non-recyclable.

Table 6 highlights the materials most commonly recycled which—understandably—were those that qualified as universal waste. Universal wastes are those materials that would otherwise be considered hazardous waste per state and federal definition, but when recycled are taken out of hazardous waste totals. If not recycled, these materials are required to be managed as hazardous waste which is considerably more expensive.

TABLE 6: UNIVERSAL WASTE RECYCLING

Material	Percent of Award Winners Recycling
Batteries	92.50%
Fluorescent lamps	83.60%
Computers/electronics	83.20%

The most commonly recycled materials can be found in Table 7. Cardboard and paper take the top spots. Inkjet and toner cartridges fell high on the list—likely due to the well-established recycling/reuse programs developed by suppliers for these materials. Cooking oil was also high on the list—though this number may go down over time as hospitals begin to phase out the use of fryers.

TABLE 7: TOP 10 MOST RECYCLED SOLID WASTE MATERIALS

Material	Percent of Award Winners Recycling
Cardboard	78.30%
Paper- HIPAA	76.50%
Inkjet and toner cartridges	63.70%
Cooking oil	60.20%
Paper- mixed	59.70%
Plastic-mixed	47.80%
Metals-mixed	46.00%
Food waste composting	44.70%
Aluminum cans	43.80%
Wood	40.30%

Eighty-two percent of all hospitals, and 100 percent of the Top 25 hospitals, are now recycling clinical (or medical) plastics.

INNOVATION IN ACTION
Brigham & Women's Faulkner Hospital

Throughout the Partners Health system, more than 100,000 pulse oximetry probes are used each year. While most probes used to be disposable, many manufacturers now make probes that can be cleaned and reused.

A Partners-wide team reviewed usage data on the reusable probes, which showed a significant savings over disposables. In conjunction with infection control professionals, the team concluded they are efficient and effective for monitoring patients' oxygen saturation. The team also renegotiated vendor contracts to receive more favorable pricing. As part of the project, cleaning processes and procedures were re-communicated to all clinical and environmental services staff.

All entities are now purchasing and using reusable pulse oximeters for the majority of patients. The lower pricing plus the move to reusable probes will save Partners more than $1.7 million each year, and will decrease the amount of waste Partners contributes to landfills.

Regulated Medical Waste

Regulated medical waste (RMW) offers the largest potential from both a waste reduction and financial perspective, due to the high cost of disposal and the tendency to not segregate comprehensively. Most facilities pay by the pound, so tracking this material is fairly straight forward. Table 8 compares RMW generation as a percent of total waste stream to RMW treatment/disposal costs as a percent of total waste disposal budget.

▸ The best performers (Top 10 percent) lowered RMW generation rates to 3.5 percent and below.

▸ All hospitals median RMW generation rate was 6.8 percent of total waste stream.

▸ All hospitals median RMW disposal costs were just over 40 percent of total waste disposal budget.

REDUCING RED BAGS

To better understand the potential to reduce RMW at your organization, it is important to understand the state-defined definition for infectious or biohazardous waste. Most states now follow the OSHA guidance and clarify that infectious waste is materials "soaked or saturated with blood or [certain] body fluids." Compare this definition with the materials staff are currently segregating into RMW containers by doing simple walkthroughs/rounding with a camera. Use photos and segregation signage/stickers to do education or in-services with that department. Virtually any hospital can reduce RMW to 15 percent or less of its total waste stream with the right programs and training. Best practice is 10 percent or less.

TABLE 8: REGULATED MEDICAL WASTE

Regulated Medical Waste	All	Small	Large	Top 25	90th %	Your Data
Percent RMW	6.8	5.9	7.5	5.6	3.5	
Percent RMW cost	40.3	40.0	40.4	39.3	17.3	

Medical Waste Treatment Strategies

The data set includes 184 facilities (including 18 of the Top 25) that treat RMW waste offsite and 39 facilities (including seven of the Top 25) that treat RMW onsite. Of those treating onsite:

▸ 82 percent use autoclaves

▸ 5.1 percent use rotoclaves

▸ 2.6 percent use incineration

▸ 10.3 percent use other

▸ None use microwave or chemical disinfection

The RMW generation data for those treating onsite and offsite is not significantly different—though facilities onsite generated slightly more RMW and had slightly lower RMW costs (as a percent of total). This reflects a historical trend of onsite technologies costing a bit less to operate than sending waste offsite, partly because labor costs are not always included.

Table 9 demonstrates the normalized metrics for RMW generation—presenting those with the highest correlation first. Across the board, the normalized volumes of RMW have decreased this year—with pounds per staffed bed decreasing from 2.7 to 1.9, and pounds per patient day decreasing from 4.0 to 3.0 this year. Part of this shift again is attributable to using the median rather than the average (eliminating the use of extremely high and low numbers). But it also reflects an ongoing focus in the industry to apply cost-cutting measures wherever possible—including waste minimization.

TABLE 9: NORMALIZED REGULATED MEDICAL WASTE GENERATION

Normalized Regulated Medical Waste Generation	All	Small	Large	Top 25	Your Data
Total pounds of RMW per square foot	0.23	0.19	0.26	0.21	
Total tons of RMW per OR	5.60	4.20	7.60	5.00	
Total pounds of RMW per FTE	97.00	88.00	103.00	86.00	
Total pounds of RMW per APD	1.40	1.30	1.70	1.40	
Total pounds of RMW per patient day	3.00	3.00	3.00	2.50	
Pounds RMW per staffed bed per day	1.90	1.70	2.00	1.80	

Award-winning hospitals are clearly familiar with the most effective strategies for reducing RMW—as evidenced by the implementation rates noted in Table 10 below. Hospitals looking to drive down their RMW numbers should focus on these strategies as a starting point to achieve the largest reductions.

TABLE 10: RMW REDUCTION STRATEGIES

Implementation Rates	All	Small	Large	Top 25	Your Data
Removed red bags from patient rooms?	79.0	81.0	77.0	88.0	
Have a reusable sharps container program?	83.0	78.0	87.0	80.0	
Utilizes a fluid management system that empties directly into the sanitary	75.1	75.0	75.2	84.0	
Collect single-use medical devices for reprocessing	87.8	85.7	89.7	96.0	
Collect single-use medical devices (SUDs) for reprocessing beyond the OR?	70.0	65.0	74.0	80.0	

Pharmaceutical Waste

Ten years ago, not many hospitals had even reviewed their formulary to determine which of their pharmaceutical wastes were considered hazardous waste. Due to widespread education, compliance audits, and the emergence of several national haulers who service pharmaceutical wastes specifically, most hospitals today have pharmaceutical waste on their radar.

That said, hazardous waste regulations in the United States were not designed with health care in mind—and many of the requirements are challenging in a health care setting where the hazardous waste can be a single pill not given to a patient. The federal regulations also overlook a number of pharmaceuticals that are now showing up in our waterways—through flushing, drain disposal and human excretion. Recognizing this loophole, some hospitals go beyond compliance and either incinerate a certain portion of pharmaceuticals as RMW, or handle more of their formulary as hazardous than the law requires. Either way, it is a complicated business.

Table 11 highlights the percentage of award-winning hospitals that are taking proactive measures to protect human health and the environment by "overmanaging" pharmaceuticals.

TABLE 11: PHARMACEUTICAL WASTE

Pharmaceutical Waste	All	Small	Large	Top 25	Your Data
Incinerates non-RCRA pharmaceutical waste	65	62	68	76	
Treats non-RCRA regulated pharmaceutical wastes as RCRA waste	49	48	50	70.8	

The management (and "overmanagement") of pharmaceutical waste is a relatively new cost for many hospitals. Not surprisingly:

▶ Larger facilities generate more pharmaceutical waste per square foot but pay less per ton.

▶ Smaller hospitals generate less per square foot but pay more per ton.

Table 12 highlights the waste generation rates for pharmaceutical waste as well as the relative costs. It is important to note that the variation in approaches for pharmaceutical waste management can lead to significantly different cost structures for this waste stream. While the 90th percentile performers generated only 2.0 tons per year—this is likely due to less stringent management of pharmaceuticals.

TABLE 12: PHARMACEUTICAL WASTE AND COSTS

Pharmaceutical Waste and Costs	All	Small	Large	Top 25	Your Data
Pharm waste (RCRA/Non-RCRA) tons	3.700	1.700	8.800	8.800	
Pharm waste (RCRA/Non-RCRA) pounds per square foot	0.015	0.013	0.017	0.021	
Pharm waste costs (annual)	$12,634	$5,356	$27,538	$12,634	
Pharm waste costs per ton	$3,384	$3,920	$3,226	$2,533	
Pharm waste cost per square foot	$0.021	$0.017	$0.024	$0.021	

Beyond end-of-life management of pharmaceuticals, hospitals are also using a variety of methods to reduce pharmaceutical waste at the source—including stock rotation to avoid expiration, alternate packaging, and inventory management. To learn more about managing pharmaceutical waste, look at Practice Greenhealth's 10-Step Blueprint, funded by the U.S. Environmental Protection Agency.

Hazardous Waste

While hazardous waste is always a small percentage of total waste stream, as noted above, the costs are a significant portion of the hospital's waste disposal budget. Hazardous waste is sometimes confused with regulated medical waste, but is only comprised of those wastes that meet the definitions in the federal Resource Conservation and Recovery Act (RCRA) or other state-level statutes. Hazardous waste is typically less than one percent of total waste and includes alcohols, xylenes, heavy metals and other chemical processes.

TABLE 13: HAZARDOUS WASTE

Hazardous Waste	All	Small	Large	Top 25	90th %	Your Data
Percent hazardous waste	0.4	0.4	0.4	0.4	0.1	
Percent hazardous waste costs	12.6	11.0	13.9	8.2	2.9	

Hospitals' hazardous waste rates can fluctuate when lab clean-outs are done, or if the hospital makes a decision to manage some items as hazardous wastes even if not technically defined as such. An easy example would include sending out certain non-RCRA pharmaceuticals as hazardous waste to better protect community health.

Because it is such an expensive waste stream and comes with complex compliance requirements, hospitals have worked hard to reduce the generation of hazardous waste. Solvent distillation continues to provide a relatively simple project with a quick payback that reduces the purchase of expensive solvents and hazardous waste disposal costs simultaneously. Of the 178 facilities who reported having onsite labs, 39 percent reported having solvent distillation programs. Table 14 shows the cumulative savings from solvent distillation/reprocessing.

TABLE 14: SOLVENT DISTILLATION/REPROCESSING

Solvent Distillation/Reprocessing	All
Total gallons of solvents reprocessed	36,622
Total annual savings from avoided virgin solvent purchase	$421,643
Total annual savings from avoided disposal costs	$118,380
Total savings from solvents	**$540,023**

Total Waste Generation

The ultimate goal in waste data tracking is reduction. Increasingly, hospitals are tracking total waste per adjusted patient day (or per patient day) as a way to capture waste prevention success. Total waste includes solid waste, recycling (but not reuse or diversion), regulated medical waste and hazardous waste. The overall goal is to reduce the total waste tonnage by choosing smarter purchasing options and changing to processes that minimize or avoid waste creation. If a facility has implemented source reduction, reuse and diversion, those efforts will show up in this total waste number. If a hospital is advanced in these efforts, their recycling numbers may actually decrease over time—as waste is prevented before it can require recycling. Table 15 demonstrates that total waste continued to drop in 2013.

TABLE 15: NORMALIZED TOTAL WASTE GENERATION

Total Waste	All	Small	Large	Top 25	90th %	Your Data
Tons per OR	91.6	77.0	102.6	98.6	14.2	
Tons per staffed bed						
Pounds per square foot	3.2	3.2	3.3	3.3	48.1	
Pounds total waste per staffed bed per day	28.4	29.4	27.3	29.7	28.6	
Pounds total waste per patient day	43.9	51.9	40.2	40.3	0.43	
Pounds per APD	22.2	21.6	22.6	20.9	2.0	

Waste costs and revenues vary over time, particularly recycling revenues. Waste cost data from 2014 award-winning hospitals indicate the following:

▶ Median recycling costs were $29 per ton (including materials in Appendix A only, which do not include SUDs).

▶ Median total waste costs were $177 per ton.

Waste disposal fees vary regionally. Waste fees per ton are less for large generators, which speaks to the value of system contracts that can improve unit pricing for smaller facilities. Bundling of services—such as using one hauler to manage multiple waste streams can also drive down prices for individual waste stream management.

TABLE 16: MEDIAN WASTE COST BY WASTE TYPE

Total Waste	All	Small	Large	Top 25	Your Data
Solid waste median cost per ton	$103	$111	$96	$97	
Recycling waste median cost per ton	$29	$32	$24	$20	
RMW waste average cost per ton	$971	$1,058	$861	$1,085	
Hazardous waste average cost per ton	$5,021	$5,855	$4,724	$3,117	
Total waste cost per ton	$177	$180	$168	$155	

Note: the marked difference in cost per ton between recycling and other waste streams is the rebates that many hospitals (or haulers) receive for recycled materials. These rebates can actually earn the hospital money to offset hauling fees—or in some cases even ameliorate hauling costs altogether and earn a profit.

Historical Waste Costs

Health care waste cost trends over the last few years are presented in Table 17, but it should be noted that in prior years the data was presented as an average, while this year the data is presented as a median value.

TABLE 17: HISTORICAL WASTE COSTS

	All 2014	All 2013	All 2012	All 2011
Solid waste cost per ton	$103	$110	$105	$126
RMW waste cost per ton	$971	$949	$905	$1,015
Hazardous waste cost per ton	$5,021	$6,800	$6,400	$6,200

Note: Each award year is based on the previous year's data (2014 values reflect 2013 data, 2013 values reflect 2012 data).

Award-winning hospitals are making great strides in reducing their waste generation rates and costs through prevention, recycling and better management and contracting techniques. Opportunities continue to lie in driving up the rate of clinical plastics recycling, better pharmaceutical waste prevention and new waste prevention initiatives that will lower total waste volumes. Meet with waste vendors to get support on data collection and reporting. Be sure to include data reporting needs in contract language. And utilize Practice Greenhealth's resources, case studies and learning network to identify innovative waste minimization programs to implement at your organization.

UNDERSTAND THE OPPORTUNITY COST OF NOT MANAGING YOUR WASTE

In this era of dwindling reimbursement, hospitals are looking for every mechanism to reduce costs. Waste management is primarily about cost-shifting from a more expensive waste stream to a less expensive waste stream. Organizations should focus initially on moving waste from the most expensive waste streams into the least expensive—where allowed by regulation (and common sense). An easy example is working with surgical services to better segregate non-infectious waste and develop clinical plastics recycling programs—thereby reducing RMW. A hospital who recycled 14 tons of medical plastics in the OR saved anywhere from $1,500-$13,500 based on median cost numbers.

Safer Chemicals

Hospitals use an array of chemicals every day to serve and protect their patients. At the same time, we know that many of these chemicals can have a negative impact on health and the environment during use and disposal. Chemical minimization is an important part of every hospital's environmental stewardship program. The data below demonstrates how Practice Greenhealth award-winning hospitals are integrating an array of innovative programs to decrease patient and staff exposure to potentially hazardous and toxic substances during the provision of care. Practice Greenhealth member facilities routinely go beyond regulatory compliance to choose safer, less toxic chemicals where possible.

Going dye-free at Dignity Health

Conversion to dye-free plastics was completed in all Dignity Health facilities by the end of May 2012. Under the new initiative, Dignity Health replaced everyday products that are used at the patient's bedside, such as bed pans, wash basins, water pitchers and drinking cups, with pigment-free products. Pigment-free products support greener manufacturing because they eliminate the need for potentially harmful chemicals during the manufacturing process. Based on its annual usage of these products, Dignity Health will divert an estimated 3,000 pounds of pigment from leaching into the soil and groundwater by switching to pigment-free plastics. The total value of the contract is $1 million per year.

Hospitals have robust programs to segregate and manage pharmaceutical wastes, eliminate the use of mercury, reduce materials with PVC and DEHP, utilize greener chemicals and equipment for cleaning and maintenance processes, and transition to safer sterilization agents and disinfectants. This year's highlights include:

▶ Seventy-nine percent of all hospital winners have chemical or purchasing policies that identify specific chemicals of concern to human health and the environment.

▶ Eighty-three percent of award winners purchase third-party certified green cleaning chemicals.

▶ Eighty-eight percent of hospitals reduced or eliminated the use of pesticides by implementing an integrated pest management (IPM) program while 58 percent have codified IPM in a policy.

▶ Fifty-eight percent have earned the Making Medicine Mercury Free Award.

▶ Eighty-seven percent purchase DEHP-free products in the NICU, while 63 percent of facilities have a DEHP and/or PVC reduction program.

Chemical Policies

An increasing number of hospitals are now proactively managing a core set of "chemicals of concern" by creating policies that limit purchase of products containing these chemicals. The list of chemicals may include PVC and DEHP, but also brominated flame retardants, bisphenol A, perfluorinated compounds and volatile organic compounds (VOCs).

TABLE 1: CHEMICAL POLICIES

Chemical Policies	All	Small	Large	Top 25	Your Data
Does the facility have chemical or purchasing policies that identify specific chemicals of concern to human health and the environment?	79.3	81.1	77.6	96.0	

Perhaps equally interesting is what chemicals of concern these hospitals targeted. Of the 176 facilities that indicated "yes" to a policy, these chemicals were included in the policy:

TABLE 2: CHEMICALS IDENTIFIED

Chemicals Identified	All	Small	Large	Top 25	Your Data
Mercury	90.3	93.0	87.8	100	
Lead	57.4	53.5	61.1	83.3	
Persistent bioaccumulative toxic substances (PBTs)	42.1	39.5	44.4	87.5	
DEHP (a plasticizer found in soft plastics)	55.1	53.5	56.7	87.5	
PVC (polyvinyl chloride, or PVC-plastics)	55.1	54.7	55.6	87.5	
Halogenated, chlorinated or brominated flame retardants	39.2	45.4	33.3	75.0	
Other phthalates (found in soft plastics)	27.8	27.9	27.8	50.0	
Carcinogens, mutagens or reproductive toxins	47.2	52.3	42.2	70.8	
Bisphenol-A	36.9	37.2	36.7	70.8	
VOCs (volatile organic compounds)	54.0	52.3	55.6	83.3	
Latex	67.6	66.3	68.9	83.3	
Halogenated plastics	24.4	27.9	21.1	54.2	
Perfluorinated compounds	21.6	23.3	20.0	50.0	
Other chemical constituents	18.2	17.4	18.9	33.3	

Note that the Top 25 award-winners included these chemicals in their policies at significantly higher rates than other hospitals—demonstrating how they have taken a leadership position driving the market for safer chemical products. Another 55.6 percent of the data set reported a fragrance-free policy for staff, recognizing the EPA and other health agencies have acknowledged a range of health problems associated with exposure to fragrance chemicals.

Green Cleaning

Hospitals use a range of cleaning chemicals and disinfectants every day to keep the hospital environment safe from pathogens for patients. Unfortunately, many of the cleaning and maintenance products also negatively impact the health of frontline staff. According to *The Lancet*, cleaning staff and nurses have some of the highest rates of work-related asthma. Green cleaning is the process of selecting cleaning products and disinfectants that maintain efficacy while decreasing the impact on worker health and the environment.

Award-winning hospitals spent nearly $2.8 million on green cleaning chemicals last year. Additionally, 98.2 percent of the data set were now using microfiber mops of cleaning cloths—up from 94 percent last year, indicating microfiber is the de facto standard choice in hospitals.

TABLE 3: GREEN CLEANING

Green Cleaning	All	Small	Large	Top 25	Your Data
Does the facility use Green Seal or UL/EcoLogo-certified cleaners?	82.8	84.6	81.2	96.0	
Has environmental services collaborated with the infection control committee to identify areas where use of disinfectants can be minimized or eliminated?	44.3	42.9	45.7	56.0	
Does the facility utilize Green Seal Certified antimicrobial hand soaps only in areas defined as necessary by the infection control committee?	36.6	43.6	30.4	52.0	
Does the facility use powered cleaning equipment (scrubbers, burnishers, extractors, vacuums, power washers) that is tested by the CRI Green Label Plus program?	52.8	46.6	58.4	72.0	
Does the facility utilize automatic scrubbing machines that use only water for floor cleaning?	78.6	75.0	81.9	92.0	

Overuse of antimicrobials and the increasing rate of antibiotic resistance is of growing concern to the health care community. Some of these concerns center around the overuse of hand soaps that contain the chemical Triclosan. Learn more about why the use of Triclosan is no longer recommended in health care settings with this July 2014 peer-reviewed article from APIC/SHEA: Strategies to Prevent Healthcare-Associated Infections through Hand Hygiene. See Section H.

Of the 183 hospitals that indicated they were using green cleaning chemicals, these were the four cleaning chemical categories with the highest rates of usage. Hospital size does not appear to impact the rate of selection of green cleaning chemicals.

TABLE 4: GREEN CLEANING CHEMICAL USAGE

Highest Green Cleaning Chemical Usage	All	Small	Large	Top 25	Your Data
General purpose (hard surface) cleaners	87.4	88.6	86.3	95.8	
Window/glass cleaners	77.1	79.6	74.7	83.3	
Bathroom/rest room cleaner	60.1	59.1	61.1	75.0	
Floor cleaners	68.9	69.3	68.4	79.2	

Note: Hospitals reported on the use of third-party certified (Green Seal /UL Eco-Logo green cleaning)

Integrated Pest Management

Integrated pest management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common sense practices to minimize the use of toxic chemical pesticides while still eradicating pest populations. This includes looking at the lifecycle of the pest and addressing the factors that determine pest survival (food, water, habitat). Table 5 demonstrates hospital progress on IPM.

TABLE 5: INTEGRATED PEST MANAGEMENT (IPM)

Integrated Pest Management (IPM)	All	Small	Large	Top 25	Your Data
Has the facility reduced or eliminated the use of chemical pesticides by implementing an IPM program?	87.7	82.5	92.3	100.0	
Has the facility developed a written IPM plan/policy for the facility that includes attention to both indoor and outdoor (buildings and grounds) pest habitats and issues?	57.6	48.5	65.5	76.0	
Does the facility use a pest control company that is third-party certified as an IPM provider and request certified IPM services?	56.0	51.5	60.2	60.0	

Sterilization and Disinfection

Sterilization and disinfection is another area where clinicians have routinely used chemicals or chemical processes with the potential to negatively impact health. Award-winning hospitals have made significant efforts to replace the use of glutaraldehyde and ethylene oxide with safer alternatives.

TABLE 6: STERILIZATION AND DISINFECTION

Sterilization and Disinfection	All	Small	Large	Top 25	Your Data
Has the facility eliminated the high-level disinfectant glutaraldehyde where possible to safer alternatives (as defined by the ICRA process involving infection prevention and control and employee health)?	89.6	90.5	88.9	96.0	
Has the facility eliminated where possible the use of the sterilant ethylene oxide (EtO) onsite while maintaining compliance with regulatory requirements?	93.2	94.2	92.2	96.0	

Of the facilities indicating they are using alternatives to glutaraldehyde and ethylene oxide, these are the alternatives being used:

TABLE 7: ALTERNATIVES TO GLUTARALDEHYDE

Alternatives to Glutaraldehyde	All	Small	Large	Top 25	Your Data
OPA (ASP Cidex OPA, Metrex Metricide OPA)	81.9	79.0	84.6	87.5	
Hydrogen peroxide	56.8	57.9	55.8	70.8	
Other	12.1	10.5	13.5	0.0	

TABLE 8: ALTERNATIVES TO ETHYLENE OXIDE (ETO)

Alternatives to Ethylene Oxide (EtO)	All	Small	Large	Top 25	Your Data
Steam sterilization	80.9	81.6	80.2	87.5	
Ozone plasma (3M Optreoz with TSO3 Sterizone technology)	14.2	9.2	18.9	37.5	
Low temperature hydrogen peroxide gas plasma (Sterrad)	65.2	65.3	65.1	66.7	
Peracetic acid (Steris 1 or 1E)	36.8	31.6	41.5	41.7	
Other	4.9	1.0	8.5	4.2	

Di-2-ethylhexyl Phthalate (DEHP) and Polyvinyl Chloride (PVC)

Table 9 demonstrates the progress that award-winning hospitals are making in reducing the use of DEHP and PVC in medical products. Steady progress was made in 2013 in reducing DEHP in the highest risk areas.

This year, 86.8 percent of reporting hospitals reported addressing DEHP in the NICU, compared to 59 percent from last year.

TABLE 9: ELIMINATION OF DEHP/PVC

Elimination of DEHP/PVC	All	Small	Large	Top 25	Your Data
Does the facility have a DEHP and/or PVC reduction program?	62.7	56.7	68.1	84.0	
Does the facility purchase DEHP-free products in the NICU?	86.8	75.0	93.2	94.4	

Learn more about the risks related to DEHP in medical devices: https://noharm-uscanada.org/issues/us-canada/scientific-reports-phthalates

Other Chemical Reduction Activities

Hospitals are working with suppliers to address the use of chemicals of concerns in a range of different products, including furniture and furnishings. Many institutions are using their chemical policies to help guide this transition but other facilities are taking the next step and specifying products in this category that achieve third-party certification. Practice Greenhealth's Healthier Hospitals Initiative has targeted healthier interiors through its Safer Chemicals Challenge. Learn more about the healthier interiors work here: http://healthierhospitals.org/hhi-challenges/safer-chemicals

TABLE 10: CHEMICAL REDUCTION ACTIVITIES

Chemical Reduction Activities	All	Small	Large	Top 25	Your Data
Does the facility purchase medical products that are free of chemicals of concern (mattresses, positioners, apparel, drapes and curtains)?	62.7	66.7	59.1	88.0	
Does the facility purchase furniture that has an environmental certification or achieves LEED health care credit?	58.4	49.0	66.7	80.0	

Reporting hospitals used the following certifications to identify environmentally preferable furniture:

TABLE 11: ENVIRONMENTAL CERTIFICATIONS FOR FURNITURE

Environmental Certifications for Furniture	All	Small	Large	Top 25	Your Data
BIFMA level	46.4	46.9	46.1	60.0	
C2C, SMaRT	32.8	42.9	26.3	25.0	
UL/Greenguard	59.2	63.3	56.6	55.0	
Scientific certification systems	22.4	26.5	19.7	0.0	
Oeko-tex	4.0	4.1	4.0	0.0	
GOTS	0.0	0.0	0.0	0.0	
LEED HC credit	40.8	30.6	47.4	60.0	
Other	5.6	8.2	4.0	5.0	

Getting Clean and Going Green at U of M

University of Michigan Hospitals and Health Centers changed flooring and cleaning methods to reduce chemicals used to clean and strip floors.

▶ Installed rubber flooring throughout Children's and Women's Hospital has which eliminated the need for stripping chemicals.

▶ Use the Diamond Pad System on stone floors which eliminates the chemical floor finishes previously used to maintain them.

▶ Use HEPA and ULPA filters in vacuums to help with air quality throughout the facilities.

▶ Use Boost Floor Scrubbers which strip and scrub floors where necessary with only water—no chemicals

Operating Room

Greening the OR was an individual section on the 2014 award application, despite having correlations to many of the other topic areas such as waste, purchasing, energy, water, and climate. It is no surprise that Practice Greenhealth has seen continued growth and momentum around Greening the OR, as an increasing number of hospitals integrate these measures into everyday practice to make their operating rooms and facilities more sustainable. Hospitals are getting smarter about how they approach environmental stewardship—and aligning their environmental goals with other strategic priorities such as cost savings and increased efficiency has been an incredibly effective tactic.

Cleveland Clinic avoided 89.6 tons of regulated medical waste in 2013 through the use of fluid management systems in its ORs. These systems saved the organization $461,840 in 2013 in avoided costs for waste disposal disposable canisters and chemical solidifiers.

The median savings resulting from sustainable programs in the OR for award-winning hospitals was $99,941 in 2013, with the highest performers seeing a savings of over $641,788 yearly. It's important to note that many of the savings reported in this section are significantly lower than expected as many applicants were not reporting savings from individual projects—pointing out the opportunity for better capture of data to support the business case for continued greening of surgical suites.

Of all of the focus areas on the awards application, Greening the OR asked the most new questions—a reflection of the shift from identifying *what* hospitals could do to reduce the impact of their ORs to *how well* they were implementing those programs. Applicants saw new questions asking for data related to cost and waste savings in an effort to target the impact and success of these programs, as well as highlight areas of opportunity for further innovation.

Practice Greenhealth also collaborated with clinician colleagues and the Green Task Force of the American Society of Anesthesiologists to identify a set of best practices and a corresponding data set for anesthesia teams. We are currently working to analyze the anesthesia data set and hope to provide more substantive conclusions about the relative impact of these programs later in 2015.

Highlights

► Eighty-eight percent of facilities have implemented reprocessing programs, saving a total of $49.2 million and diverting 847 tons of waste out of the regulated medical waste stream.

► Eighty percent of award-winning hospitals are now recycling clinical/medical plastics in the OR, reflecting a huge shift across the sector as more haulers are willing to consider this recycling stream.

► Seventy-five percent are reviewing and reformulating OR kits to reduce excess waste and drive down both supply and disposal costs.

► Eighty-two percent of award winners report using rigid sterilization containers with the median hospital achieving about a 50 percent implementation rate so far.

Waste in the OR

We know that operating rooms are a huge source of both solid waste and regulated medical waste—estimated to account for 30 percent of a facility's total waste and generate up to 60 percent of the organization's regulated medical waste (RMW). Hospitals are making fantastic progress on reducing RMW with the median rate hovering at around 6.8 percent of total waste for award winners. Table 1 highlights strategies for reducing RMW in the OR setting. Proper segregation of non-infectious waste is up from 83 percent in 2013 to 93 percent before the case and 92 percent during the case in 2014.

TABLE 1: WASTE SEGREGATION AND MANAGEMENT

Waste Segregation and Management	All	Small	Large	Top 25	Your Data
Have a process to divert pre-incision (prior to the case) non-pharmaceutical waste from the regulated medical waste stream into the solid waste stream for non-infectious waste disposal?	92.8	93.4	92.3	100.0	
Have a process to segregate non-infectious solid waste from the regulated medical waste stream during and after the procedure?	91.9	92.5	91.4	100.0	
Utilize a fluid management system that empties directly into the sanitary sewer as a means to reduce exposure to bloodborne pathogens and reduce waste?	75.1	75.0	75.2	84.0	
Utilize a reusable canister fluid management system?	63.9	65.4	62.5	68.2	

Fluid management systems hold huge potential for waste reduction—as blood and body fluids are diverted to the sanitary sewer—and hospitals are realizing that as adoption has grown from 66 percent of award winners in 2013 to 75 percent of award winners in 2014. Award-winning hospitals reported $1,566,242 in combined savings in 2013 from fluid management systems, a dramatic underestimate—with only 20 facilities able to report cost savings—of the 109 who indicated they utilize these systems.

Clinical Plastics Recycling in the OR

Plastics are abundant in the OR, including packaging, disposable sterile wrap, trays, saline bottles, tubing, and more. The majority of these plastics are generated during set up—before a patient even enters the room, and can safely be recycled. Almost 80 percent of award applicants (up from 78 percent in 2013) and 96 percent of the Top 25 are working with their vendors to establish and maintain programs to recycle these clinical plastics within the OR.

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INNOVATION IN ACTION
Johns Hopkins Hospital

Hospitals continue to drive innovation in this space—coming up with new ideas every day to conserve financial resources and reduce environmental impact. Johns Hopkins Hospital shared:

> " Our first project that was successful in the OR was an initiative to reduce red blood cell wastage in the operating room. We created a system using coolers to store blood, so unused blood could be returned to the blood bank instead of being discarded after 30 minutes if unused. Temperature sensors were placed on the blood units and they were stored under ice. We placed posters in the OR reminding providers to use coolers for blood. Blood waste from coolers became almost zero. Overall we reduced blood wastage by 61 percent, saving almost $800,000! "

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TABLE 2: WASTE SEGREGATION AND MANAGEMENT

Waste Segregation and Management	All	Small	Large	Top 25	Your Data
Recycles clinical/medical plastics in the OR	79.8	81.1	78.6	96.0	

Of the 178 facilities who reported recycling clinical plastics in the OR, the types of plastics being recycled include:

TABLE 3: TYPES OF RECYCLED PLASTICS

Types of Recycled Plastics	All	Small	Large	Top 25	Your Data
Clean rigid plastics of any shape (trays, containers, packaging)	80.9	81.4	80.4	91.7	
Clean empty bottles (saline and alcohol)	84.3	84.9	83.7	95.8	
Clean sterile wrap (blue wrap, polypropylene sterile wrap)	77.0	74.4	79.4	83.3	
Clean, soft plastics (overwraps)	54.5	59.3	50.0	83.3	
Clean Tyvek®	24.7	24.4	25.0	41.7	
Other	7.3	7.0	7.6	8.3	

Single-use Device Reprocessing

Single-use device (SUD) reprocessing continues to increase across the sector, with 88 percent of award winners currently reprocessing 847 tons of devices for a combined savings of $49.2 million. Table 4 shows the progress on reprocessing over the past five years.

Single-use Device Reprocessing Yearly Growth

TABLE 4: SINGLE-USE DEVICE REPROCESSING YEARLY GROWTH

Year	Tonnage	$ Savings	% Award Winners
2010	79	10.8 million	68% (41/60)
2011	321	11.8 million	77% (106/138)
2012	321	18.3 million	82% (115/141)
2013	680	20.5 million	82% (162/198)
2014	847	49.2 million	88% (196/223)

Note: the year corresponds to the issue date of the Benchmark Report reporting on data from the previous year.

New this year, applicants were asked to break out reprocessing data into the main departments where these devices are collected and/or bought back. The OR was the clear leader, generating 73 percent of the reprocessing totals. Combined, award-winning hospitals reprocessed nearly 847 tons of single-use medical devices for a combined savings of more than $49 million.

2014 Single-use Device Reprocessing Savings

TABLE 5: 2014 SINGLE-USE DEVICE REPROCESSING SAVINGS

Department	Tonnage for All Award Applicants
OR	619.06
Patient care	166.19
EP/cath labs	19.83
Other	41.89
Total	846.97
Department	**Savings for All Award Applicants**
OR	$32,115,601
Patient care	$8,379,989
EP/cath labs	$6,089,653
Other	$2,649,015
Total	$49,234,258

Because reprocessing extends across hospital care settings and because it ranks as a high priority for action due to the significant cost savings to purchase reprocessed devices, Practice Greenhealth is looking at reprocessing through the lens of two different normalizers.

TABLE 6: SINGLE-USE DEVICE REPROCESSING AVOIDED WASTE

Single-Use Device Reprossing Avoided Waste	All	Small	Large	90th%	Your Data
Savings $	1,682	920	2,928	17,082	
Avoided waste (tons)	3.6	2.1	4.8	10.2	

2014 Reprocessing Compliance

Also new this year, Practice Greenhealth asked facilities to report their reprocessing compliance rate. This rate is a good way to measure the success of re-purchasing reprocessed devices at the facility. The reprocessing compliance level looks at the number of devices a facility can reprocess compared to the number of devices they actually repurchase. This metric tells us the most about how hospitals are performing in this arena compared to their potential. Not every device collected can be re-purchased—a device can only be reprocessed a specified number of times and some devices don't pass inspection for reuse. The median reprocessing compliance level was 67, with the 90th percentile performers hitting compliance rates of nearly 93 percent.

TABLE 7: REPROCESSING COMPLIANCE LEVEL

Reprocessing Compliance Level	All	Small	Large	Top 25	Your Data
Reprocessing compliance level	67.0	63.5	70.0	92.9	

OR Kit Reformulation

Most award-winning hospitals are conducting annual reviews of the contents of their OR kits. This process involves reviewing each of the OR kit types, and determining which supplies are used in a majority of cases, and which supplies are unnecessary and are frequently thrown out without being used. Nearly 75 percent of award winners are reviewing their OR kits, with the Top 25 hospitals at 100 percent. Most hospitals that reported reviewing their kits indicated they had reviewed 100 percent of their kit types resulting in almost $4 million in savings.

TABLE 8: OR KIT REFORMULATION

OR Kit Reformulation	All	Small	Large	90th%	Your Data
Review and reformulation of OR kits	74.4	69.8	78.6	100.0	
Percentage of total kits reviewed (of those that reviewed OR kits)	100.0	100.0	100.0	100.0	

Table 9 highlights the breakdown of the cost savings derived from the kit review process—with avoided purchase of unnecessary supplies being the dominant cost-savings factor. It should be noted that these savings are a conservative estimate, given that only 31 percent of facilities replying yes were able to quantify their cost savings.

TABLE 9: OR KIT COST SAVINGS

	Savings
Avoided waste disposal fees from eliminating unnecessary supplies	$21,326
Cost savings from purchase of unnecessary supplies	$3,876,535
Total OR kit review cost savings	$3,897,861

Rigid Sterilization Containers

In an effort to reduce packaging waste and move toward leaner practices, many facilities are utilizing rigid sterilization containers for surgical instrumentation. In 2013, 81.7 percent of award applicants (up from 75 percent last year) and 92 percent of the Top 25 reported using rigid sterilization containers. The containers eliminate the need to purchase and dispose of blue sterile wrap. The median hospital had transitioned to reusable containers for around 50 percent of their kits in 2013. Of those that tracked and reported savings, hospitals saw a combined savings of $1.5 million.

TABLE 10: RIGID STERILIZATION CONTAINER

Rigid Sterilization Containers	All	Small	Large	Top 25	Your Data
Utilizes reusable hard cases for sterilization of surgical instrumentation and reduction of disposable sterile wrap	81.7	77.9	85.2	92.0	

TABLE 11: RIGID STERILIZATION CONTAINER SAVINGS

Rigid Sterilization Container Savings	Savings
Avoided waste disposal fees from eliminating unnecessary supplies	$21,326
Cost savings from purchase of unnecessary supplies	$3,876,535
Total OR kit review cost savings	$3,897,861

Note: Only 20 percent of those responding "Yes" to rigid sterilization containers were able to quantify any cost-savings data, so this savings number dramatically underestimates the cost-savings associated with award winners' transition to reusable containers.

Reusable Surgical Items

Many hospitals are making the switch back to reusables in the OR—albeit a new generation of reusables that meet today's standards for efficacy and infection prevention. There is still a significant opportunity around reusable surgical gowns. Despite anecdotal and peer-reviewed literature that support increased clinician comfort with reusable gowns, some hospitals still struggle with these materials being properly maintained and repaired by in-house sterile processing versus a third party reprocessor.

TABLE 12: REUSABLE SURGICAL ITEMS

Reusable Surgical Items	All	Small	Large	Top 25	Your Data
Does the facility utilize reusable surgical items where environmentally and clinically preferable?	83.6	83.8	83.3	88.0	
Of the facilities that indicated "yes," the items reused the most were:					
% Reusable surgical gowns	27.3	21.6	32.6	36.4	
% Reusable surgical towels	59.6	56.8	62.1	81.8	
% Reusable laryngeal mask airways (LMA)	23.5	28.4	18.9	40.9	
% Reusable patient positioning devices	65.6	71.6	60.0	86.4	
% Reusable surgical basins and pitchers	41.5	42.0	41.1	45.5	
% Reusable trocars	39.9	42.0	37.9	54.5	

Energy Management in the OR

The OR contributes significantly to a hospital's overall energy consumption, requiring high air exchange rates, stringent temperature and humidity requirements, significant plug load and significant lighting loads. Focusing efforts on energy reduction in the OR is a great opportunity for many hospitals. Only 40 percent of award applicants have an HVAC setback program in place and just 57.6 percent utilize LED surgical lighting. Even fewer utilize occupancy sensors to automate and reduce energy consumption from lighting. These numbers speak to the challenge of securing funding (CAPEX or other) for energy improvements despite clear evidence of return on investment. When these programs are in place, savings can add up.

TABLE 13: ENERGY MANAGEMENT IN THE OR

Energy Management in the OR	All	Small	Large	Top 25	Your Data
Programmed the HVAC system to reduce air changes per hour (ACH) when the ORs are unoccupied to reduce energy consumption	39.6	37.3	41.7	52.0	
Utilize LED surgical lighting	57.6	49.5	64.7	76.0	
Utilize occupancy sensors for lighting to reduce energy consumption when the OR is unoccupied	23.5	24.8	22.4	20.0	

HVAC setback in particular can be a low-cost program to implement and has been estimated to save around $2,000-3,200 per OR per year.[1] LED surgical lighting generates significantly less heat in the surgical field than the older alternatives, and can improve clinician comfort while also allowing higher temperature set points in the OR. Higher temperature set points may also reduce the need for warming devices to maintain patient normothermia.

Anesthesia Usage

New this year, applicants were asked to submit data on anesthesia usage at their facility. These questions were asked in part to establish a baseline for greening anesthesia care, but also to help facilities begin to understand the impact their current anesthesia practices may have relative to greenhouse gas emissions. Most hospitals vent waste anesthetic gases into the atmosphere with little understanding of the global warming potential (GWP) of these gases. Practice Greenhealth hopes to shine a light on current practice, while collaborating with anesthesiology colleagues to identify an improved set of best practices that align with clinical excellence and impact the facility's overall bottom line.

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1   Energy Efficiency Opportunities in the OR presentation, Greening the OR Symposium, September 11, 2014. Dan Doyle (Grumman Butkus), John Villani (Grumman Butkus), York Chan (Advocate Health)

TABLE 14: ANESTHESIA USAGE

Anesthesia Usage	All	Small	Large	Top 25	Your Data
Purchases or in-house pharmacy prepares pre-filled syringes to minimize wastage of unneeded pharmaceuticals	68.9	65.3	72.1	72.0	
Purchases the smallest pharmaceutical vials possible to minimize pharmaceutical wastage	86.9	83.5	89.9	88.0	
Utilizes a supplemental waste anesthetic gas capture system to prevent waste anesthetic gases from venting to the outside air	51.7	49.0	54.1	44.0	

The data supplied on specific anesthetic agent usage is currently being reviewed and analyzed for research purposes. Practice Greenhealth will share more information on this topic later in 2015, upon completion of the analysis.

In 2015, Practice Greenhealth hopes to identify a new set of innovations in the OR space to share with our members. If you have a greening the OR innovation or case study to share, contact Kaeleigh Sheehan, OR project manager at ksheehan@practicegreenhealth.org.

The University of Maryland Medical Center was the recipient of the first Greening the OR Environmental Excellence Award. UMMC was one of the original endorsing hospitals of the Greening the OR Initiative, highlighting their long-time work using reusable linens in the operating room in a case study. Since then, UMMC has continued to lead the way in creating a more sustainable surgical department through clinical leadership and innovation, and worked to reduce waste and implement green building elements in the newest addition to their facility—all while gathering and tracking data to highlight their successes.

Healthy Food

Sustainable food systems are an integral part of reducing an organization's environmental footprint and a vital ingredient in improving the health of employees, patients and the community. Practice Greenhealth award-winning hospitals are demonstrating creative methods to decrease food waste, donate food to community organizations for redistribution, and compost food waste to decrease methane, a powerful greenhouse gas. Food service directors are increasingly purchasing locally and sustainably produced food, advocating for less meat/healthier meat meals, and are making impressive progress on reducing sugar-sweetened beverages.

Fifty-seven percent of the Top 25 hospitals have developed a hospital garden or farm.

Dartmouth–Hitchcock Medical Center

Though sustainable food programs are still in their infancy compared to waste and energy reduction programs, there is a rapidly growing consensus within the medical community that food is the next frontier.

Highlights

▸ Award winners spent 49.7 percent of their beverage budget on healthy beverages in 2013.

▸ Award winners spent 17.7 percent of their budget on local and sustainably produced food in 2013.

▸ Award winners decreased their percentage of meat use by 10.1 percent over the previous year.

▸ Hospitals committed to environmental stewardship are typically composting 35.3 tons of food waste annually.

Sustainable Food Programs

The data from 2014 indicates that Practice Greenhealth Environmental Excellence Award winners are on the right track with programs designed to encourage a healthy food production system. In 2014, Practice Greenhealth specifically looked at hospital performance in three key areas:

Meat Reduction: This focus relates to reducing the risk of cardiovascular disease and obesity through healthier eating, and the use of less environmentally intensive food sources.

Healthier Beverages: This focus is on minimizing the purchase of sugar-sweetened beverages as a means of reducing the risk of obesity and diabetes while also mitigating risks related to high-fructose corn syrup production.

Local and/or Sustainably Produced Food: This focus is on reducing the transportation miles that food travels while strengthening local economies, moving away from the use of toxic pesticides, additives and growth hormones, and promoting an equitable farming system that supports workers.

TABLE 1: SUSTAINABLE FOOD PROGRAMS

Sustainable Food Programs	All	Small	Large	Top 25	Your Data
Has the facility reduced meat options and/or serving sizes on the menu for cafeteria/retail and patient service?	69.1	69.5	68.7	92.0	
Has the facility increased healthy beverage options in at least three of the following: cafeteria/retail, patient, vending and catering?	86.5	81.1	91.5	96.0	
Has the facility purchased locally and/or sustainably grown and produced foods?	84.2	86.7	82.1	88.0	

In 2014, Practice Greenhealth identified three corresponding food-related metrics by which it would measure award applicants on these focus areas. The measures are highlighted below:

Percent Meat Reduction: Current pounds of meat per meal current/baseline pounds of meat per meal.

Percent Spend on Healthy Beverages: Spend on healthy beverages/total spend on all beverages.

Percent Spend on Local/Sustainably Produced Foods: Spend on foods meeting the definition of local or sustainable/total spend on all foods.

TABLE 2: FOOD METRICS

Food Metrics	All	Small	Large	Top 25	Your Data
Percent meat reduction (by weight)	10.1	9.6	10.3	0.7	
Percent healthy beverage spend	49.7	51.2	48.9	52.9	
Percent spend on local/sustainable	17.7	17.9	17.6	15.0	

Note: These metrics are identical to those collected by Practice Greenhealth's Healthier Hospitals Initiative.

Hospitals are making substantive progress on reducing sugar-sweetened beverages but are largely still getting started on meat reduction and local/sustainable foods. Bringing in local and environmentally preferable foods at an affordable price can sometimes involve significant relationship development and collaboration with suppliers, farmers and broadline distributors. Practice Greenhealth and its Healthier Hospitals Initiative have been at the forefront of facilitating conversations between health care providers and these key stakeholders. Even basic tracking of food SKUs defined as sustainable can be a multi-step process to derive. The good news is that suppliers, distributors and contracted food service vendors are listening and many want to be part of revolutionizing health care food service.

Dollars spent in pursuit of healthier food systems is impressive. Award-winning hospitals spent $51.9 million on healthier and more environmentally preferable foods and beverages last year. Not every award applicant provided dollars spent on these measures—a likely indicator that the actual spend is significantly higher. And while this spend doesn't yet tell us anything about the benefits derived, it does tell us the market demand for sustainable foods is growing rapidly.

WHAT IS A FOOD HUB?

A regional food hub is a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand.[1] In other words, a food hub refers to when a hospital or health system works to serve locally grown goods in their food-service operations.

(1) National Good Food Network at www.ngfn.org/resources/food-hubs.

Hospital-Supported Agriculture

Table 3 highlights hospitals' commitment to community-supported agriculture programs. Local food networks support environmental stewardship from the seed and soil to the plate with fewer pesticides, natural fertilization, local distribution, open-space preservation, water pollution controls and—of course—tastier, more nutritious foods. Many hospitals now have on-campus gardens, which provide food for their own kitchens as well as local food pantries.

TABLE 3: PARTNERSHIPS WITH LOCAL FARMS

Hospital Supported Agriculture: Food and Farm Linkages	All	Small	Large	Top 25	Your Data
% Farmers markets developed, implemented, or continued in 2013	66.8	59.0	73.9	87.5	
% Hospital garden or hospital farm developed, implemented, or continued in 2013	26.5	28.2	25.0	52.0	
% CSA* subscriptions developed, implemented, or continued in 2013	35.0	37.9	32.5	36.0	
% Food hubs developed, implemented, or continued in 2013	46.1	45.6	46.6	68.0	
% Food tracking and traceability developed, implemented, or continued in 2013	79.8	81.4	78.4	92.0	

*CSA stands for Community Supported Agriculture—and typically refers to a partnership with local farm(s) to drop off produce on a regular schedule for employees to take home.

Farmer's markets have been an incredibly successful way for hospitals to publicize their commitment to healthier, local food while engaging employees, patients and visitors. An impressive 73.9 percent of large hospitals now support farmer's markets.

Food Waste Reduction

Hospital winners are reducing food waste through smarter menu planning, creative recipes, donation of food to underserved populations and most importantly, through composting food waste. Food waste that goes to the landfill generates methane, a powerful greenhouse gas that impacts climate change. Composting food waste appropriately can dramatically reduce the greenhouse gases associated with disposal while also creating a valuable soil amendment—reducing the need for artificial fertilizers and chemicals. The EPA highlights the primary approach to food waste reduction in its Food Recovery Hierarchy.

TABLE 4: FOOD WASTE REDUCTION

Food Waste Reduction	All	Small	Large	Top 25	Your Data
Does the facility have a food waste reduction plan that is being implemented and tracked?	56.2	57.3	55.2	80.0	
Does the facility have a food waste composting program and tracking system?	43.2	35.6	50.0	60.0	

Larger hospitals are more able to implement food waste composting programs—beating smaller hospitals by more than 15 percent. One likely factor is accessibility to composting vendors, with larger hospitals tending to be in more urban settings where there are more vendors available to compete for service contracts. Larger hospitals also generate a larger volume of composting material, which can improve bargaining with existing vendors for lower prices or transport fees. Most composting efforts begin in food prep area, as you can see from Table 5.

TABLE 5: COMPOSTING EFFORTS

Of the facilities indicating "yes" to composting, these areas were included in composting efforts:	All	Small	Large	Top 25	Your Data
Food preparation areas	95.8	100	93.1	93.3	
Cafeteria/retail	70.5	67.6	72.4	86.7	
Catering	61.1	59.5	62.1	73.3	
Patient meals	57.9	56.8	58.6	80.0	

Composting efforts in the cafeteria or cafes can be dependent upon educating employees, patients and visitors to separate their food waste materials at some sites. Innovative containers and consistent signage and training can make or break a composting program. Practice Greenhealth tracked and normalized composting data this year. The factors that correlated best with compost tonnage were the number of FTEs and the square footage (gross floor area) of the institution.

TABLE 6: NORMALIZED COMPOSTING DATA

Normalized Composting Data	All	Small	Large	Your Data
Annual pounds composted per FTE*	30.63	38.19	29.45	
Annual pounds composted per square foot	9.00	8.00	9.00	

*FTE stands for full-time equivalent worker.

> "We implemented a Health Share program with a primary care site—identified 25 patients with hypertension and likely food insecurity. Partnered with a local farm to deliver shares weekly at the primary care site, each week including a cooking demo and recipes. Before and after biometrics showed some significant lifestyle behavior impacts. We hope to expand this model to four sites in 2014."

The University of Vermont Medical Center,
Formerly Fletcher Allen Medical Center

Food Purchasing

The majority of hospital food service programs used to be self-operated, but that balance is shifting, as hospitals zero in on perceived opportunities to standardize, build economies of scale, and identify new revenue sources. If hospitals/health systems do choose to outsource their food service operations, it is critical to consider what aspects of a sustainable food system actually need to be built into the RFP or contract language. Increasingly, hospitals have an expectation that their food services partner will help provide data on spend for different healthy eating options, will replicate innovation from other sites and will

build lasting partnerships with local and sustainable food producers and distributors.

► Sixty-three percent of award-winning hospitals outsourced their food services department or management in 2013.

► Fifty-six percent of award-winning hospitals included language on local/sustainable food purchasing and other environmental stewardship goals in policy, contract or RFP language in 2013.

Whether a hospital uses self-op or outsourced food services, one theme is consistent: healthier food systems and eating patterns are critical to population health and wellness. Practice Greenhealth predicts that the focus on sustainable food systems will be transformative in the next few years—with health care systems leading the charge.

Cooley-Dickinson Hospital, Northhampton, MA

► Implemented Meatless Monday a year ago
► Eliminated the deep fat fryer
► Removed all high fat and high sugar snacks from cafeteria
► Removed soda from the hospital - vending, cafeteria, patient floors, etc.
► Implemented a food donation program ; food donated to a kitchen in Springfield, MA
► Implemented a food waste composting program
► Changed their menus to match local seasonal food harvest in partnership with their farmers

St. Joseph Chippewa Falls Community Garden

Environmentally Preferable Purchasing

With an annual spend of over $200 billion, the health care sector has an opportunity to leverage its purchasing power to buy products and services that minimize and reduce human health and environmental impacts. Environmentally preferable purchasing (EPP) means having a focus on conserving natural (and organizational) resources, reducing potential exposures to chemicals of concern, minimizing or eliminating waste, and saving energy and water—all of which are directly connected to achieving health care sustainability goals and align with supporting healthier places to live, work and heal.

"In 2013, Regions conducted extensive product evaluation seeking compostable cups. We evaluated over 10 different cups for performance, appearance and price. In addition, we conducted a two week pilot at two of our hospitals (Regions & Lakeview) and then followed up with a user satisfaction survey. The selected cup will be deployed in Q1 2014 across the organization."

Regions Hospital, St. Paul, MN

In addition to impacts from product use and disposal, EPP looks at the impacts related to raw material extraction, production, manufacturing and distribution. These lifecycle impacts may include air and water pollution, solid waste generation and greenhouse gas emissions. There is an increasing understanding that a product's entire lifecycle can directly impact environmental and human health.

Highlights

▸ Response showed 89.2 percent of award-winning hospitals have engaged with their supply chain leadership around sustainability.

▸ We saw 82.5 percent of award winners have communicated with their group purchasing organization (GPO) regarding their support for environmentally preferable products.

▸ Nearly 70 percent have set priorities for purchasing environmentally preferable products.

Table 1 presents data on the infrastructure for EPP among this year's winners. The Top 25 award winners are excelling as leaders around purchasing—demonstrated by the 96 percent of these facilities that have an EPP policy or procedure manual, compared to 69 percent of all hospitals. And 100 percent of Top 25 have demonstrated their commitment by engaging supply chain leadership in sustainability activities. In addition, 80 percent of Top 25 award winners have signed Practice Greenhealth's EPP pledge, compared to just 48 percent of other hospitals in the data set. In order to achieve Top 25 status—progress and demonstrated commitment on purchasing is critical.

TABLE 1. INFRASTRUCTURE FOR EPP

The data in this table represents percent of PFC award winners who answered yes to the questions below.

Infrastructure for EPP	All	Small	Large	Top 25	Your Data
Has the facility engaged supply chain leadership in sustainability activities?	89.2	88.6	89.7	100.0	
Has the organization signed Practice Greenhealth's EPP pledge?	47.7	49.5	46.2	80.0	
Does the facility define EPP roles/responsibilities in job descriptions, policies and/or procedural manuals?	24.5	22.8	26.1	48.0	
Does the facility have an EPP policy or procedural manual that considers specific environmental attributes of concern during purchasing decisions?	68.5	73.8	63.8	96.0	

Beyond having an EPP policy in place, it is useful to understand in what areas we have made the most progress. Table 2 highlights the environmental attributes included in EPP policies—with the most prevalent environmental considerations at the top of the table.

TABLE 2: EPP ENVIRONMENTAL CONSIDERATIONS

Attribute	All	Small	Large	Top 25	Your Data
Avoiding chemicals of concern	92.0	90.8	93.2	100.0	
Energy efficiency	91.3	90.8	91.9	95.8	
Recycled content of product	83.3	82.9	83.8	91.7	
Waste minimization	83.3	80.3	86.5	87.5	
Water efficiency	81.3	80.3	82.4	87.5	
Recyclability	80.7	76.3	85.1	95.8	
Excessive packaging	78.0	69.7	86.5	95.8	
Reusable (vs. single-use) products	78.0	75.0	81.1	87.5	
Whether the product becomes or generates hazardous waste	70.7	65.8	75.7	87.5	
End-of-use product management (such as take-back)	68.0	59.2	77.0	75.0	
Green building products	54.0	54.0	54.1	58.3	
Other	21.3	17.1	25.7	20.8	

Contracting for Environmentally Preferable Products

The success of environmentally preferable purchasing in health care requires a critical piece—the voice of health care facilities in driving suppliers to offer these products/services. In a two-pronged approach, health care organizations are notifying their suppliers and their GPOs of their support for increasing the availability of cost-effective, environmentally preferable products. Over 82 percent of all award-winning hospitals have reached out to their GPO to communicate their interest. In order to contract for environmentally preferable products, EPP considerations must be included in the procurement decision-making process. Many award-winning hospitals are taking leadership roles by including EPP in their purchasing decisions—96 percent in the Top 25 and 68 percent of all hospitals.

TOTAL COST OF OWNERSHIP?

With tremendous cost pressures, many hospitals are looking at unique ways to save money. For many medical devices and services, there are submerged costs that are not always reflected in the purchase price and may not be considered during purchasing decisions—which can be very dependent on first cost. Yet significant savings can be found when looking beyond the purchase price. By looking at the total cost to own a product, health care organizations capture use costs, such as training, maintenance, energy and water use, and end of use costs, such as disposal, to evaluate the total savings to their health care organizations.

Clearly, setting EPP priorities has value in signaling GPOs and suppliers what they are targeting and 100 percent of the Top 25 award-winning hospitals have done so.

TABLE 3. CONTRACTING FOR ENVIRONMENTALLY PREFERABLE PRODUCTS

Contracting For Environmentally Preferable Products	All	Small	Large	Top 25	Your Data
Has the facility communicated with their GPO regarding support for environmentally preferable products?	82.5	81.4	83.5	96.0	
Has the facility reviewed upcoming contracts (that will expire or be renewed in the next six to 12 months) to identify EPP opportunities or savings?	67.0	74.0	60.7	92.0	
Has the facility set priorities for purchasing environmentally preferable products?	69.7	70.6	69.0	100.0	
Does the facility have a process to include environmental specifications or RFP questions in bids or utilize GPO-provided environmental information?	67.9	68.0	67.8	96.0	
Has the facility specified in contract templates and other supplier outreach materials the organization's commitment to EPP?	57.9	59.4	56.6	80.0	
Does the facility track and report metrics regarding green spend (what is spent for environmentally preferable products)?	48.8	47.5	50.0	68.0	
Has the facility introduced supply chain staff to the Standardized Environmental Questions for Medical Products?	51.9	50.5	53.0	72.0	

Aggregating the voice of health care facilities around specific EPP priorities is an effective communication tool to increase availability of cost-effective and environmentally preferable products. For example, several health care organizations announced in 2014 their concern about the presence of flame retardants in furniture and their intent to no longer purchase furniture containing these chemicals[1]. Setting specific priorities like this sends a clear market signal.

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1   Practice Greenhealth. "Health Care Sector Moves Away from Flame Retardants in Upholstered Furniture." Health Care Without Harm. Web. 10 September 2014.

Table 4 reflects responses to an open-ended question to identify applicants' EPP priorities. The results may reflect a snapshot in time within their organizations. While some responses are duplicative and this list does not attempt to prioritize this information, it does provide insights into the day-to-day understanding of EPP concepts and considerations. Responses were specific to product categories, EPP attributes and EPP implementation strategies.

TABLE 4. EPP PRIORITIES

EPP Priorities	
Product/Service Targeted	**EPP Attribute(s)**
Medical Products and Equipment	
IV fluids, IV sets	DEHP-free
Single-use devices	Buying reprocessed, reprocessing
Products in NICU	DEHP-free
Sharps containers	Recycled content and reusable
Linens	Switch from disposables to reusables
Office/Services	
Copy paper, paper office supplies	Recycled content
Print management	Paper reduction
Office supplies	Recycled content
RX deliveries	Reduce frequency
Waste and recycling management services	
Food	
Food - produce	Buy local, pesticide-free
Food ware	Compostable, recyclable or reusable
Food - meat	Antibiotic-free
Food - beverages	Healthier
Building/Facilities	
EPEAT and ENERGY STAR devices	Energy efficient
Janitorial cleaners, microfiber mops	Green Seal certified, biodegradable
Napkins and towels	Unbleached
Lighting	Energy efficient
Equipment	Water efficient, energy efficient
Bulk towel and soap dispensers	Use less product
Other	
Federally mandated EPP categories	Biodegradable, recycled content, safer chemicals
Packaging	Reusable containers, Styrofoam-free, reduced packaging

When asked to describe their facility-specific EPP priorities, award-winning hospitals highlighted a range of different strategies. Table 5 highlights hospital responses to this question and effectively shows that hospitals are making significant strides in this area.

TABLE 5. PRIORITIES IN EPP IMPLEMENTATION

Priorities in EPP Implementation
Include EPP in purchasing decision hierarchy (clinical, financial, EPP)
Include EPP in new product evaluation
Review contract categories with GPO and consider EPP characteristics within each category
Support TSCA reform
Integrate EPP requirements into new preferred vendor innovation program
Automatically defaults to EPP product in the system
Annual goals based on three-year rolling plan seizing opportunities that arise from expiring contracts and proactively addressing areas of focus such as flame retardants
Discuss with our vendors to purchase as local as possible, mercury and DEHP-free and low VOC
Developed list of EPP guidelines that target waste, chemical usage, energy/waste consumption and local purchasing factors; highlight the ideal product characteristics for purchasers to seek
Share our priorities with our GPO and work with them and their supply chain management team to develop a more specific plan for improving data tracking and increasing our purchases of EPP products and services
Include EPP policy in all new contracts and requests for proposals
Prioritize EPP in green team, clinical device and product evaluation committee and OR product evaluation committee
Expect procurement and supply chain to set goals [related to EPP]

While this section of the report covers policies, priorities and strategies related to EPP, purchasing is an integral component in the success of almost every other sustainability focus area. The purchasing of environmentally products and services is the heart of any environmental stewardship commitment—a focus on making purchases that will not negatively impact human or environmental health. The examples below demonstrate this dependency on purchasing:

Focus Area: Less Waste

EPP Strategy: Purchase reusable sharps containers or reprocessed devices

Focus Area: Safer Chemicals

EPP Strategy: Purchase third-party certified green cleaning chemicals

Focus Area: Less Energy

EPP Strategy: Purchase ENERGY STAR labeled or EPEAT-registered equipment or electronics

Focus Area: Healthy Food

EPP Strategy: Purchase locally produced or sustainable food and beverages

Focus Area: Greening the OR

EPP Strategy: Purchase rigid sterilization containers or reusable surgical gowns

These examples above are not meant to be all-inclusive, but highlight how critical purchasing is to achieving results in other sustainability focus areas. While this year's data shows improvement in EPP practices, better engagement with supply chain around attributes that can better protect community health is still a huge area of opportunity for hospitals.

"A LESSON IN LOGISTICS

We collaborated with multiple departments to take advantage of materials daily deliveries from the downtown campus to the eastside campus. Often the delivery truck was making deliveries to eastside and then returning to downtown with no load in the truck. After having success transporting recycling to downtown for further processing, it became clear that other items could be sent between the two hospitals with a little planning. Equipment, linen, and engineering supplies all took advantage of this new option. "

Bon Secours St. Francis Health System
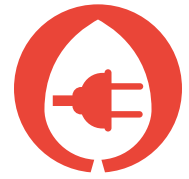
Energy

The U.S. health care sector uses more energy than all commercial sectors other than food service. Accordingly, hospitals are estimated to generate 8 percent of total US greenhouse gas emissions[1], in addition to a range of toxic air pollutants and acid rain contributors. With its strict air change, temperature, pressure and humidification requirements, it is not surprising that health care uses a significant amount of energy. And that doesn't take into account all of the major diagnostic equipment—like MRIs and CAT scans that produce heat while also utilizing energy. At the same time, we also know that U.S. hospitals use considerably more energy than their European counterparts—without significantly better outcomes to justify that excess energy use.

Award-winning hospitals saved more than $25 million on energy reduction projects in 2013.

Energy reduction has become a pillar of sustainability programs for good reason. Not only can it drive down environmental impact, it can also generate considerable ongoing cost savings with a short payback period. So much so that many large organizations have begun to hire energy managers—in addition to hiring a sustainability leader. Hospital administrators are also now seeing energy use intensity (EUI) make its way onto the executive dashboard. Hospitals continue to make strong (if gradual) progress on the energy front.

Highlights

▶ Award-winning hospitals reduced energy by 871 million kBtus.

▶ Award-winning hospitals saved more than $25 million from energy reduction.

▶ Hospital winners purchased $43.6 million dollars of third-party certified energy efficient products and equipment.

Table 1 highlights the overarching energy use and savings achieved by the 2014 award-winning hospitals.

TABLE 1: ENERGY USE AND SAVINGS

Energy Use and Savings	2014 All Winners
Consumption	
Total energy use (sum of all facilities)	47,195,538,523 kBtus
Median energy use Intensity	233 kBtus/ft2
Savings	
Total energy saved (through energy efficiency projects)	871,000,001 kBtus (or 1.85%)
Total energy savings (through energy efficiency projects)	$24,988,332

Table 2 lays out the percent of energy usage reduced by award-winning hospitals. The Top 25 hospitals showed a clear commitment to making energy reduction a priority— with nearly twice the energy reduction percentage of the larger data set. And hospitals with the biggest gains topped 10 percent energy reduction in 2013.

TABLE 2: ENERGY USAGE

	All	Top 25	90th Percentile
Percent of energy reduced from baseline	1.50%	3.80%	10.6%

In the 2014 application, there was no ability for hospital applicants to denote a significant difference in square footage between baseline year and current year. Actual percent reductions could be higher if square footage varied significantly.

TABLE 3: MEDIAN ENERGY USE INTENSITY OF AWARD WINNERS

Median Energy Use Intensity of Award Winners[1]	2012[2]	2013	2014
Energy use intensity	108 kBtus/ft2	225 kBtus/ft2	233 kBtus/ft2

(1) Year refers to awards year, which represents the previous year's data.

(2) In 2012 awards year, Practice Greenhealth only captured electricity user per square foot.

Normalized Energy Use

Because energy use can vary so radically depending on the size or patient volume of the building, we typically discuss energy using normalized data. Energy use intensity (EUI) or energy use (in kBtus) per square foot is the most common metric utilized for tracking energy use—followed closely by weather-normalized EUI. Practice

Greenhealth also encourages hospitals to correlate their energy with a denominator associated with patient volumes such as adjusted patient day or patient day. This type of correlation is an important step in a hospital's sustainability journey as it ties energy utilization directly to patient care. Table 4 highlights the best indicators for

energy performance in the 2014 awards cycle, starting
with highest correlation.

TABLE 4: NORMALIZED ENERGY USE

Normalized Energy Use	All	Small	Large	Your Data
Total kBtus used current per square foot (EUI)	233	242	230	
Total kBtus used current per OR	11,543,217	11,011,326	12,892,383	
Total kBtus used current per FTE	97,336	106,436	91,312	
Total kBtus used current per APD	1,586	1,653	1,525	

Regression analysis of the energy data showed that square footage can explain 93 percent of the variation in energy use between hospitals—making it the best indicator.

Energy Benchmarking

Practice Greenhealth uses a range of benchmark comparisons to demonstrate the progress of award-winning hospitals on the energy front. Many hospitals utilize ENERGY STAR Portfolio Manager to benchmark energy usage. Award-winning hospitals reported the following involvement in ENERGY STAR.

TABLE 5: ENERGY STAR PARTICIPATION

ENERGY STAR Participation	All	Small	Large	Top 25	Your Data
Does the facility use ENERGY STAR Portfolio Manager?	52.9	51.0	54.7	76.0	
Has the facility benchmarked your hospital using ENERGY STAR's Portfolio Manager?	76.5	79.0	74.1	96.0	
Median ENERGY STAR score	42.0	45.0	40.0	47.0	

Award winners reported that 76.5 percent used Portfolio Manager to benchmark at least once. It appears that every day usage of Portfolio Manager is less common (52.9 percent)—likely pointing to a lack of bandwidth on the part of some facilities directors to keep it up to date. Many health systems are now outsourcing this utility bill management and tracking component to outside companies who are responsible for populating both Portfolio Manager and other utility dashboards at the system level. In order to really utilize energy benchmarking effectively, it needs to be monitored monthly, so that any spikes in energy use can be identified and correlated with other activity at the institution—to prevent future spikes.

POWERING DOWN WITH PARTNERS HEALTH

Partners' information systems department has set goals for saving electricity, reducing costs and minimizing carbon emissions by reducing the power consumption of the organization's computer systems.

As part of the SavePower! program, all personal computers are configured to switch to standby mode during off hours. Between the hours of 7:30 p.m. and 5:00 a.m., monitors and logged-off desktop computers automatically power down without being turned off after 30 minutes of inactivity, and are easily reawakened. Partners' 35,000 computers in private offices and work areas are included in the SavePower! program. The SavePower! program does not apply to computers in clinical areas because they often are used on a 24-hour basis and need to remain awake at all times. On a yearly basis this project saves about 9,447,000 Kwh and $1.5 million dollars.

Energy Benchmarking by Building Size

The U.S. Energy Information Administration collects energy information from commercial buildings every five years through its Commercial Buildings Energy Consumption Survey—better known as CBECS. At the time of publication, the CBECS data for 2012 was still unavailable. But a comparison to CBECS data from its 2007 survey show award-winning hospitals are making great progress in driving down energy use.

TABLE 6: ENERGY USE INTENSITY

Energy Use Intensity (kBtus/ft2)	CBECS 2007 EUI (average)	2014 Award Winners (median)
Hospitals with <100,000 ft2	N/A[1]	259
Hospitals with 100,001- 200,000 ft2	N/A[1]	273.3
All large hospitals[2]	234.1	229.9
Hospitals with 200,001-500,000 ft2	270.1	245.6
Hospitals with 500,000- 1,000,000 ft2	233.4	227.3
Hospitals with > 1,000,000 ft2	212.8	217.7

1) CBECs only includes hospitals with over 200,000 ft2 of gross floor area.

2) All large hospitals with >200,000ft2

Not surprisingly, smaller hospitals had higher EUIs. Award-winning hospitals performed better than the CBECS data set in every category except those facilities over one million square feet. Table 7 provides a more detailed set of metrics based on facility size.

TABLE 7: ENERGY METRICS FOR 2014 AWARD WINNERS

Energy Metrics for 2014 Award Winners (Median)	Energy Use Intensity (kBtus/ft2)	ENERGY STAR Score	Percent Change in EUI from Baseline	Percent Change in EUI from Previous	% Onsite Renewable Energy	% Offsite Renewable Energy
All hospitals	233	42	-0.70%	-1.40%	1.20%	4.60%
Hospitals with <100,000 ft2	259	33	1.16%	0.37%	N/A*	4.60%
Hospitals with 100,001-200,000 ft2	273.3	45	-3.47%	-0.86%	N/A	17.35%
Hospitals with 200,001-500,000 ft2	245.6	47	-0.24%	-0.36%	11.20%	4.06%
Hospitals with 500,000-1,000,000 ft2	227.3	37	-1.39%	-2.50%	1.18%	5.39%
Hospitals with > 1,000,000 ft2	217.7	42	-1.12%	-2.10%	0.40%	4.25%

CBECS only includes hospitals with over 200,000 ft2 of gross floor area.

Energy Benchmarking by Climate Zone

Another way to compare the awards data set is look at energy use as a function of geographic location and climate. CBECS designates five different climate zones—related to the number of heating and cooling degree days, a measure of when the temperature is above or below 65 degrees Fahrenheit and the building must be either heated or cooled to achieve a 65 degree temperature. Figure 1 illustrates the US Climate Zones for CBECS.

Climate Zones

- Zone 1 is less than 2,000 CDD and greater than 7,000 HDD.
- Zone 2 is less than 2,000 CDD and 5,500-7,000 HDD.
- Zone 3 is less than 2,000 CDD and 4,000-5,499 HDD.
- Zone 4 is less than 2,000 CDD and less than 4,000 HDD.
- Zone 5 is 2,000 CDD or more and less than 4,000 HDD.

Each building in the CBECS is assigned a CBECS climate zone based on the 30-year average (1971-2000) HDD and CDD (base 65 degrees Fahrenheit) for the NOAA climate division in which the weather station closest to the sampled building is located. For more information on climate zones see: http://www.eia.gov/consumption/commercial/census-maps.cfm#defined
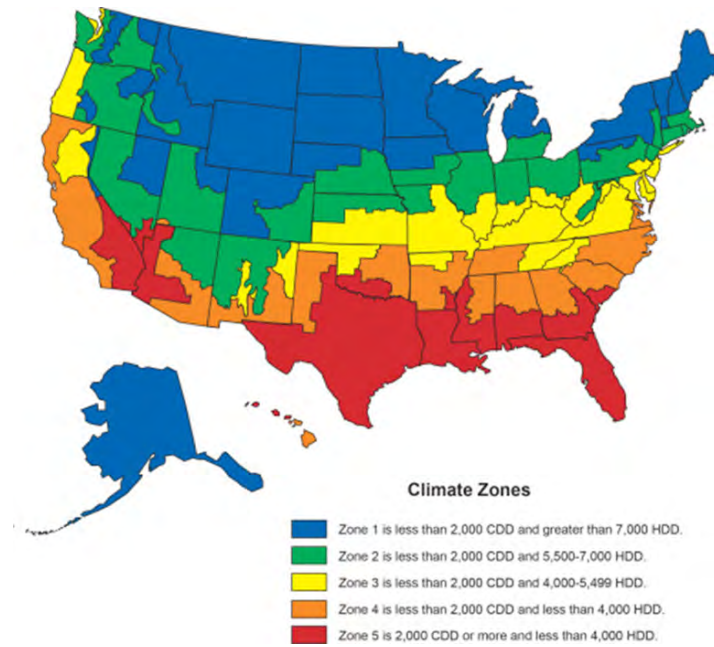
TABLE 8: CLIMATE ZONES

Climate Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Cooling degree days	<2,000	<2,000	<2,000	<2,000	>2,000
Heating degree days	>7,000	5,500 to 7,000	4,000 to 5,499	<4,000	<4,000
Climate Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Number of hospitals in each zone reporting data	40	61	53	47	6
Median energy use intensity	221	244	227	208	265
% kBtus saved	0.93	3.34	1.01	2.19	3.78
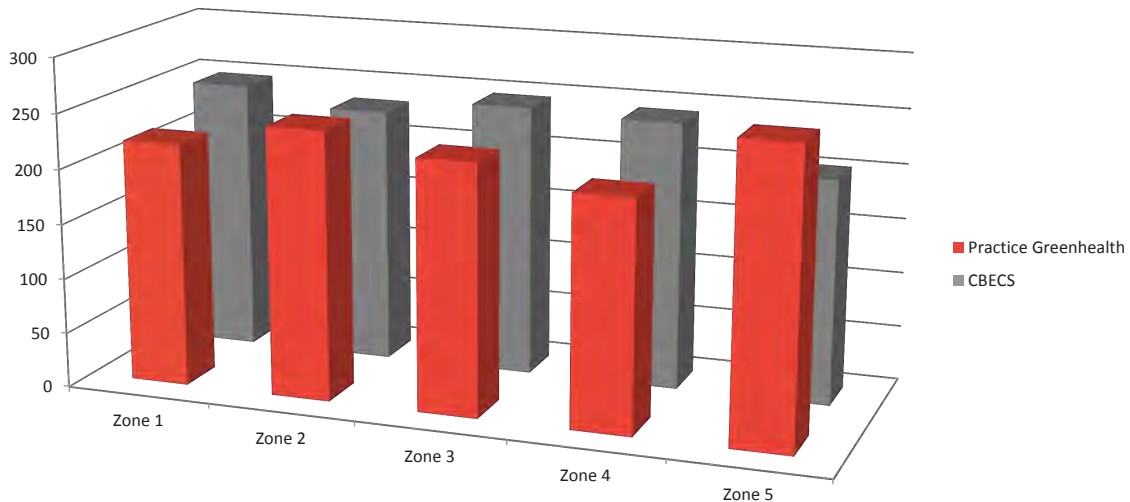
> With the severe winters the northeast has seen in the past few years, the most useful energy metric may be one that Practice Greenhealth does not yet compute for its award winners—weather-normalized EUI. This metric takes into account the number of heating and cooling degree days in a particular region that year and adjusts the EUI accordingly. Practice Greenhealth is looking into the most effective way to assist hospitals in tracking this metric in the 2015-2016 awards year.

Renewable Energy Use

Across the United States, issues such as population health, energy security, climate change and resiliency are starting to be drivers for hospitals to explore renewable energy use. Conventional fossil-fuel based energy production generates a myriad of pollutants that negatively impact health—causing asthma and respiratory disease. The burning of fossil fuels—such as coal for electricity use—is also a major contributor to the greenhouse gas emissions driving climate change, which brings in another set of health concerns including a rise in infectious disease, vector-borne illnesses, allergies, asthma, heat waves and food shortages. Health care organizations trying to operate in alignment with their mission to first do no harm are exploring new ways to generate alternative energy sources in a fossil fuel-based economy.

For the third year, Practice Greenhealth presents data on renewable energy use by award-winning hospitals. Here's what the data is telling us:

▶ Twenty-one percent of award-winning hospitals reported purchasing or generating renewable energy as some portion of their energy portfolio in 2013.

▶ 4.6 percent of hospitals reported putting a combined heat and power/cogeneration project in place.

In some areas of the country, offsite renewable energy options are a lot more plentiful—such as low-impact hydropower in the northwest or wind power on the east coast. Purchased renewable energy (offsite) is an entry-level way for hospitals to start mitigating their greenhouse gas impact. The next step is to start exploring opportunities to generate a portion of the facility's energy onsite—moving toward eventual energy independence. Hospitals are approaching this through both power purchase agreements—where energy providers build out onsite renewables and hospitals buy back that power, or through the funding of new technologies such as ground source heat pumps or cogeneration. Table 9 highlights renewable energy use at award-winning hospitals.

TABLE 9: MEDIAN RENEWABLE ENERGY USE

Median Renewable Energy Use	All	Small	Large	Top 25	Your Data
Onsite renewable energy (as a percent of total energy use)	1.2	1.2	1.0	21.1	
Offsite renewable energy (as a percent of total energy use)	4.6	4.6	4.7	4.6	
Total renewable energy use (as a percent of total energy use)	4.17	4.6	3.5	4.6	

TABLE 10: RENEWABLE ENERGY USE BY ENERGY TYPE

Type of Alternative Energy	Number of Facilities Reporting Onsite	Number of Facilities Reporting Offsite or Purchasing RECs	Total Number of Facilities Reporting
Solar	11	1	12
Photo-volatic	4	1	5
Wind	2	14	16
Geothermal	0	0	0
Biomass	3	1	4
Biogas	1	0	1
Low-impact hydropower	2	6	8
Total	23	23	46

Energy Efficiency Planning and Strategy

Equally important as benchmarking is understanding what hospitals are doing to plan for energy use reductions. In an era of dwindling reimbursement, energy reduction can provide long-term operational savings that benefit the bottom line. Table 11 highlights the components hospitals are using to plan for energy efficiency measures. Audits, retrocommissioning and submeters are all mechanisms to establish where energy use is outside of expected ranges—so that the facility can optimize.

Consistently, the Top 25 winners show an elevated aptitude for energy conservation—owing in part to committed leadership, and often—a sustainability director or energy manager who is taking the lead on energy. In general, larger hospitals have made more progress on energy efficiency than smaller hospitals, likely also related to dedicated leadership or availability of funding. Retrocommissioning remains an area of huge opportunity for hospitals in identifying potential inefficiencies. Both energy audits and retrocommissioning are foundational steps in any energy management plan.

TABLE 11: ENERGY EFFICIENCY PLANNING AND STRATEGY

Energy Efficiency Planning and Strategy	All	Small	Large	Top.25	Your Data
Does the facility have a written plan to reduce energy use over time with timelines and goals?	52.8	48.5	56.5	72	
Does the facility have a Strategic Energy Master Plan (SEMP)?	26.3	24.5	27.8	40	
Did the facility conduct a baseline energy audit for the institution in the past five years?	57.3	55.3	59.1	68	
Has the facility engaged a retrocommissioning firm to optimize building performance?	41.6	39	43.9	54.2	
Does the facility utilize submeters to better monitor energy efficiency opportunities?	20.9	12.9	28.2	41.7	

Energy Efficiency in Information Technology

In addition to using electricity through plug load, information technology (IT) also generates a significant amount of heat that requires special space cooling to ensure its proper functioning. There are a number of energy efficiency measures aimed specifically at IT—so working with the IT department to explore these programs and highlighting energy use in purchasing decisions can be an effective strategy for additional energy reduction.

Nearly 30 percent of award-winning hospitals had onsite data centers in 2013—with large hospitals topping small hospitals by a nearly 15 percent margin. Virtual servers, power PC management and the purchase of more energy-efficient equipment are all proven strategies. Table 12 demonstrates that award-winners see IT as a critical part of the energy reduction strategy.

TABLE 12: ENERGY EFFICIENCY IN INFORMATION TECHNOLOGY

Energy Efficiency in Information Technology	All	Small	Large	Top 25	Your Data
Does the facility have an onsite data center that requires a constant power load of 75 kW or more?	29.5	21.4	36.6	33.3	
Has the facility collaborated with the information technology (IT) department to integrate energy efficiency measures?	55.6	50.5	60.2	70.8	
Does the facility purchase energy-efficient equipment that is ENERGY STAR labeled or EPEAT registered (where applicable)?	80.2	76.5	83.6	91.7	

Energy Efficiency Savings

Award winners reported savings of 871,000,000 kBtus in 2013 from projects implemented in the last two years that range from low-cost retrofitting projects to those requiring millions of dollars of capitol investment. These projects totaled nearly $25 million in cost-savings and reduced greenhouse gas emissions. While these savings are impressive, there is still a very real opportunity to dramatically improve energy performance in hospitals.

Practice Greenhealth acknowledges that one big opportunity developing education, training and resources that assist facilities managers and sustainability directors develop airtight business cases that demonstrate to health care leadership that these investments are smart, financially sound and critical to living their mission and supporting the population health model.

Water

When organizations cite the mantra of actions they are taking to reduce environmental impact, the first three listed are typically reducing waste, and reducing natural resources such as energy and water use. Yet water reduction programs lag dramatically behind the other two programs in the health care sector—driven in part by the inappropriately low cost of water. Water is a critical natural resource—necessary for human health in a variety of ways. In a health care setting, water is imperative for everything from environmental surface cleaning to handwashing to sterilizers for medical equipment—all of which protect patients from dangerous and deadly pathogens. Yet the universally low commodity pricing of water in the United States, renders its conservation low-priority even in drought-plagued regions.

Award-winning hospitals saved more than 275 million gallons of water and saved $12 million in 2013.

Because water is a fundamental determinant of health and because climate change brings with it the very real potential for severe droughts and water shortages in the years ahead, health care needs to consider water conservation a priority. Sustainability is not just about environmental stewardship—it is also about resiliency and disaster preparedness in the face of unknown future risks. The water data from Practice Greenhealth continues to highlight how few hospitals have made significant gains in this area:

- Less than 25 percent of award-winning hospitals have conducted a water audit (23.2 percent) or created a written plan (22.2 percent) to reduce water with a definable timeline or goals.

- While 44 percent of award winners benchmark water usage—only X percent were able to share any water reduction project data at all.

The good news is that there is still a lot of progress to celebrate. Award-winning hospitals have continued to make incremental but steady progress on water reduction—achieving a seven percent reduction over last year.

TABLE 1: WATER USE

Water Use and Savings	2014 All Winners
Consumption	
Total water use (sum of all facilities)	8 trillion gallons
Median water use intensity	45.3 gallons per square foot (7 percent reduction since last year)
Savings	
Total water saved (through conservation projects)	>275 million gallons
Total water savings (through conservation projects)	$1,119,404

Overall water consumption decreased for the data set from the 2013 data set to the 2014 data set. Water consumption statistics for this data set are presented in the following tables.

Highlights of the Data

▶ Square footage was again the best predictor of water consumption.

▶ Median annual water consumption decreased from 48.7 gallons per square foot last year to 45.3 gallons per square foot this year.

▶ Median annual water consumption was 58 gallons per cleanable square foot.

▶ Best performers (90th percentile) used 11.5 gallons per square foot or less.

Normalized Energy Use

Practice Greenhealth uses several normalizers to compare water use in hospitals. Water use intensity is typically measured in gallons per square foot and regression analysis shows that 79 percent of the variation in water use between sites can be explained by square footage—making it the most reliable normalizer. And new this year, Practice Greenhealth measured water use per cleanable square foot[1]. Practice Greenhealth also encourages hospitals to correlate their water usage with a denominator associated with patient volumes such as adjusted patient day or patient day. This type of correlation is an important step in a hospital's sustainability journey as it ties energy utilization directly to patient care. Table 2 highlights the best median indicators for energy performance in the 2014 awards cycle, starting with the highest correlation.

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1   Cleanable square foot is measured by gross square feet minus the walls (1.5 percent of gross square feet) minus non-cleanable areas (electrical closets, mechanical rooms, storage rooms).

TABLE 2: WATER CONSUMPTION

Water Consumption	All	Small	Large	Top 25
Gallons per square foot	45.3	44.2	46.8	42.1
Gallons per cleanable square foot	57.6	57.9	55.0	53.1
Gallons per patient day	604.0	669.0	524.0	479.0
Gallons per OR	2.3 million	1.9 million	2.7 million	2.0 million
Gallons per APD	299.0	264.0	309.0	255.0

The Top 25 clearly outperformed other hospitals on water use metrics, coming in at nearly five gallons per square foot less than all hospitals in the data set. In comparison to last year's data set, award winners have achieved significant reductions—though some of that progress may be attributable to better identification and removal of outlier data and improved tracking. The reduction trend for award winners has been consistent however, as shown by Figure 1.

FIGURE 1: MEDIAN WATER USE INTENSITY

Median Water Use Intensity

2014 gallons per sq ft	45.3
2013 gallons per sq ft	48.7
2012 gallons per sq ft	49.38
2011 gallons per sq ft	48.29
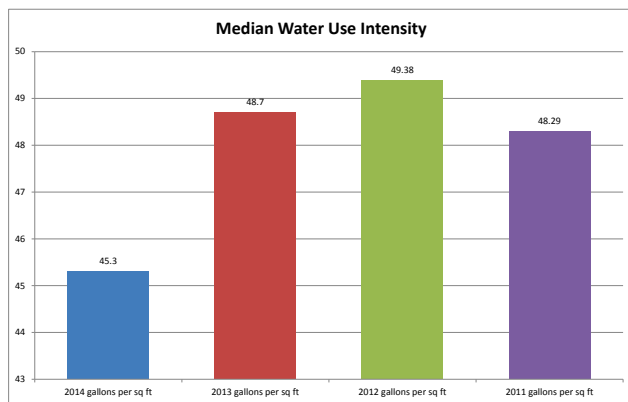
Water Benchmarking by Building Size

The U.S. Energy Information Administration collects energy information from commercial buildings every five years through its Commercial Buildings Energy Consumption Survey—better known as CBECS. In 2007, for the first time, CBECS began collecting water data for large hospitals—those over 200,000 ft^2. At the time of publication, the CBECS data for 2012 was still unavailable. This report references CBECS' *Consumption Information for Large Hospitals*[2] which uses 2007 data and was published in August 2012. A comparison in Table 3 of award winners' water usage to CBECS data shows Practice Greenhealth award-winning hospitals consumed less water per square foot for every size category listed below. Practice Greenhealth hospitals bettered CBECS hospitals by a range of 32-40 percent—demonstrating that hospitals committed to sustainability and part of the Practice Greenhealth learning community are leading on water performance by a clear margin.

2   Citation for CBECS Water Data 2007, Table H8

TABLE 3: WATER CONSUMPTION DATA BY HOSPITAL AREA

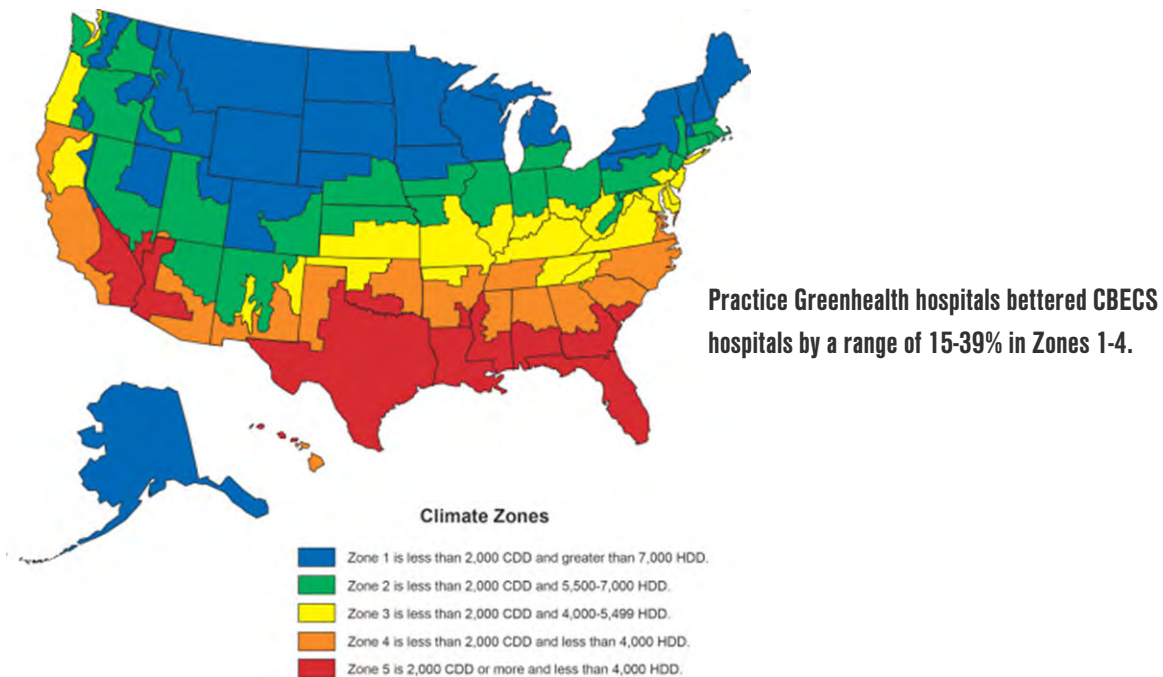| Gross Square Feet	Gallons Per Square Foot CBECS[1] (average)	Gallons Per Square Foot Practice Greenhealth (median)	% Less Consumption by Practice Greenhealth
<100,000	N/A[1]	37.6	–
100,001 to 200,000	N/A[1]	42.0	–
200,001 to 500,000	78.0	52.9	32%
501,000 to 1,000,000	69.1	44.8	35%
> 1,000,000	60.0	41.8	40%

CBECS only benchmarked for hospitals with >200,000 ft^2.

Water Benchmarking by Climate Zone

While size is one variable that may affect water consumption, geographic location also may have a strong affect. Another way to compare the awards data set is to look at water use as a function of geographic location and climate. Water consumption data was compared between Practice Greenhealth award-winning hospitals and CBECS data. CBECs designates five different climate zones—related to the number of heating and cooling-degree days, a measure of when the temperature is above or below 65 degrees Fahrenheit. Figure 2 illustrates the U.S. climate zones for CBECS.

FIGURE 2: ENERGY USE AND COST BY TEMPERATURE ZONES: CBECS, 2003

Climate Zones

- Zone 1 is less than 2,000 CDD and greater than 7,000 HDD.
- Zone 2 is less than 2,000 CDD and 5,500-7,000 HDD.
- Zone 3 is less than 2,000 CDD and 4,000-5,499 HDD.
- Zone 4 is less than 2,000 CDD and less than 4,000 HDD.
- Zone 5 is 2,000 CDD or more and less than 4,000 HDD.

Practice Greenhealth hospitals bettered CBECS hospitals by a range of 15-39% in Zones 1-4.

Each building in the CBECS is assigned a CBECS climate zone based on the 30-year average (1971-2000) HDD and CDD (base 65 degrees Fahrenheit) for the NOAA climate division in which the weather station closest to the sampled building is located. For more information on climate zones see: http://www.eia.gov/consumption/commercial/census-maps.cfm#defined

It should be noted that the CBECS data set (3040 facilities) is much larger than the awards data set (223 hospitals) and includes data only for hospitals larger than 200,000 square feet and the Practice Greenhealth data set includes 15 hospitals with 200,000 square feet or less.

When compared to CBECS data by climate zones, Practice Greenhealth award-winning hospitals consumed less water per square foot in four out of five zones.

Practice Greenhealth hospitals bettered CBECS hospitals by a range of 15-39 percent in Zones 1-4. Data indicates that Practice Greenhealth hospitals used 38 percent more water per square foot than CBECS medians in Zone 5. However, it should be noted that the Practice Greenhealth data set had only five hospitals reporting in Zone 5, which may be too small to draw statistically significant conclusions.

TABLE 4: WATER CONSUMPTION DATA BY CLIMATE ZONE

Climate Zone	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Practice Greenhealth gallons per square foot (gross floor area)	42.0	41.3	49.8	60.3	91.5[2]
Hospitals in Practice Greenhealth data set by zone	38.0	50.0	52.0	47.0	52.0
CBECS[1] data set gallons per square foot	68.7	63.5	77.1	70.9	61.5
Hospitals in CBECS data set by zone	517.0	818.0	501.0	794.0	410.0
% Improvement over CBECS	39%	35%	35%	15%	Worse by 38%

1) Table H8. Water Consumption Information for Large Hospitals, 2007, published August 2012

2) Note: Only five facilities reported in the Practice Greenhealth data set for Zone 5, making the data set too small to be statistically significant.

Water Reduction Planning and Strategy

The data in Table 5 represents basic actions taken by facilities to plan for and achieve water conservation. The Top 25 hospitals have an obvious lead in all water efficiency categories, and the gap between them and other award winners was largest in regard to utilizing audits, sub-metering and the development of a water reduction plan. Water audits and submetering are both key strategies in identifying water inefficiencies, and fundamental to developing a water reduction plan.

TABLE 5: WATER REDUCTION PLANNING AND STRATEGY

Water Reduction Planning and Strategy	All	Small	Large	Top 25	Your Data
Contracted with a third party to conduct water audits	23.2	18.2	27.7	36.0	
Benchmarks water usage	44.0	42.3	45.5	52.0	
Has a written plan to reduce water use over time with time lines and goals	22.2	21.6	22.8	36.0	
Utilize submeters	25.7	21.8	29.2	48.0	

▸ Forty-four percent of award winners are benchmarking their water use.

▸ 47.6 percent of award winners are using alternative landscaping methods.

Water Efficiency Measures

Award winners used a range of strategies to achieve water reductions—showcased in Table 6. This list of qualitative actions should be part of the foundation for a strategic plan for water efficiency. While some progress is promising, a comprehensive knowledge of water consumption and identification of conservation opportunities is being realized by only about a quarter of hospitals in the data set.

Notably—most applicants were not able to answer the question around how much energy it takes to deliver water to their site. Making the energy connection with a hospital's water is an important step in the facilities sustainability journey as it will allow for better understanding of the dependent relationship between energy use and water consumption.

INNOVATION IN ACTION
Advocate Illinois Masonic Medical Center

Last year Advocate Illinois Masonic transitioned from a water ring medical vacuum system to an air cooled medical vacuum system, which was installed in August 2013. The hospital's water savings were so great in the first few months that the City of Chicago called to inquire about the change in water usage, wondering if their meters were wrong! The transition was estimated to save 3.5 to 4 million gallons of water annually. The facility also reclaims chiller condensate. The condensate from the chilled water coils is reclaimed and used in their cooling towers for evaporation—a water savings of 385,000 gallons per year.

TABLE 6: WATER REDUCTION STRATEGIES

Water Reduction Strategies	All	Small	Large	Top 25	Your Data
Use alternative landscaping methods that reduces the need for irrigation	47.6	42.6	52.3	56.0	
Utilizes US EPA WaterSense criteria during procurement	28.2	24.2	31.8	41.7	
Has the facility made any efforts to reuse non-potable water?	22.1	14.6	28.6	24.0	
Determined how much energy it takes to deliver water	1.4	0.0	2.6	8.0	

Water Savings

The hospitals in the awards data set saved 32 percent more water through conservation projects than reported last year (275 million gallons vs. 209 million gallons) and reaped over a million dollars in savings. Savings in both gallons and dollars are actually larger than reported below, as some facilities reported conservation projects without submitting complete data.

▶ Hospitals saved over 275 million gallons through water reduction projects.

▶ Hospitals saved over $1.1 million through water reduction projects.

▶ Hospitals saved a median of 1.58 gallons per square foot.

TABLE 7: NORMALIZED GALLONS SAVED THROUGH WATER CONSERVATION PROJECTS

Water Conservation	All	Small	Large	Top 25	Your Data
Total gallons saved per square foot	1.58	2.69	1.42	1.63	
Gallons saved per patient day	30.00	48.00	21.00	41.00	
Gallons saved per OR	109,500.00	129,840.00	98,921.00	129,840.00	
Gallons saved per APD	14.00	20.00	9.00	24.00	

Practice Greenhealth also calculated the percent reduction in water from baseline year, shown in Table 8 below. It is important to note—in the 2014 application, there was no ability for hospital applicants to denote a significant differ-ence in square footage between baseline year and current year. Actual percent reductions could be higher if square footage varied significantly.

TABLE 8: WATER REDUCTION METRICS

Water Reduction Metric	All	Small	Large	Top 25	Your Data
Percent change in water use (gallons/ft²)	2.5	4.3	1.8	8.1	

The 2014 data set demonstrates that award-winning hospitals continue to make progress on water reduc-tion—but need more from Practice Greenhealth in terms of strengthening the business case, identifying low-cost/no-cost water savings opportunities and helping hospitals understand the imperative to reduce water for health and resiliency factors, despite low-cost incentives.

Climate

Prestigious journals such as *The Lancet*, and the World Health Organization have called attention to climate change as posing the most pressing threat to public health in the 21st century. In Europe, there is widespread awareness and acceptance of climate change and well-established programs to mitigate its impact. In the United States, political infighting and an allegiance to major corporate donors has deadlocked Congress on making any palpable progress on mitigating greenhouse gas emissions, despite the United States' role as the number one contributor worldwide.

Although many hospitals are just getting started on climate mitigation, 21.5 percent of award winners had performed a greenhouse gas emissions audit.

A 2009 piece in the Journal of the American Medical Association (JAMA) laid out data demonstrating that hospitals contribute approximately eight percent of the total U.S. greenhouse gas emissions—their large-scale energy use a dominant factor. In 2014, Practice Greenhealth formally added climate to the Environmental Excellence Awards applications. Although there were already questions scattered throughout the application related to the organization's climate impact, a more formal focus was needed to help hospitals get their arms around the everyday contributors to greenhouse gas emissions—and familiarize them with the potential tracking methodologies.

It is clear that most health care facilities have a limited understanding of climate change and the primary ways in which their organizations contribute to the problem. 57 percent of award applicants were able to provide some portion of data on greenhouse gas emissions, but very few could share a comprehensive picture of their emissions. And Practice Greenhealth award winners represent the most progressive and accomplished hospitals in the U.S. from an environmental stewardship perspective.

The good news? Award-winning hospitals are actually making significant inroads on climate impact by addressing a host of contributors, even if their awareness levels are low. Energy use from fossil fuels is the primary contributor to greenhouse gas emissions, but landfill waste, food production and food/supply transport, and even anesthetic use contributes significantly. Award-winning hospitals are consistently driving down their energy use, creating programs that divert waste from landfills through recycling and source reduction, driving down food miles by buying more locally and reducing meat use—to name a few. The challenge for Practice Greenhealth as a learning community is to help health care organizations connect the dots.

Climate is still a very difficult topic to broach in certain executive settings—due to political allegiances or belief frameworks. But the science is unequivocal. Climate change is impacting public health and that impact will only increase. And health care organizations are major contributors. It can be helpful to frame climate change mitigation work through a public health lens or from a resiliency standpoint—helping the organization align with its mission to protect and improve population health and prepare for catastrophic weather conditions—should they arise.

Highlights

▶ Thirty-seven percent of award-winning facilities and 48 percent of the Top 25 had signed onto a climate challenge of some sort.

▶ 21.5 percent have conducted a greenhouse gas emissions audit, led by two large health systems and a few academically affiliated medical centers.

Climate Change Commitments

Table 1 lists the percentage of award-winning institutions committing to a climate change challenge or goal, and highlights the different kinds of commitments made. A number of the initiatives and organizations iterating these challenges also provide valuable resources and tools for a hospital to consider in its greenhouse gas reduction efforts.

TABLE 1: CLIMATE CHANGE COMMITMENTS

Climate Change Commitments	All	Small	Large	Top 25	Your Data
Has the facility signed on to any of these climate change challenges or commitments?	37%	<1%	44%	48%	
American College & University Presidents' Climate Commitment (ACUPCC)	5	<1	8	17	
Climate registry	33	41	26	<1	
Local/state/regional commitment	31	24	33	58	
Other	38	38	35	33	

Mitigation Strategies

Actions such as conducting a greenhouse gas (GHG) emissions audit and developing a climate change mitigation plan are important steps in this work. They ensure the organization has a clear idea of its baseline emissions and activities, and that it has "connected the dots" on other sustainability strategies that are interrelated. Connecting an organization's energy and water master plan with climate change mitigation efforts is a natural step, as GHG emissions can easily be calculated using ENERGY STAR Portfolio Manager or other easily accessible online tools. Practice Greenhealth sees the low performance numbers in this arena as a clearly defined need for additional education and training. Even the Top 25 hospitals, while succeeding in most other areas of their sustainability programs, have room to innovate and drive the climate change work.

Below are list of actions asked of award applicants. Actions such as conducting a greenhouse gas emission audit and developing a climate mitigation plan are important steps in this work. Connecting an organization's energy and water master plan with climate is a natural step as climate emissions can easily be calculated. From an EPP standpoint, alternative transportation registered at a higher percentage of hospitals tying climate initiatives with their purchasing.

TABLE 2: CLIMATE CHANGE STRATEGIES

Climate Change Strategies	All	Small	Large	Top 25	Your Data
Has the organization performed a greenhouse gas (GHG) emissions audit?	21.5	19	23.7	20	
Does the facility have a written plan to address climate change mitigation over time with time lines and goals?	17.5	13	21.4	8	
Has the organization calculated the carbon footprint of its anesthetic gas emissions?	13.6	11	15.9	8	

Renewable Energy Use

Electricity production alone was responsible for 32 percent of U.S. greenhouse gas emissions in 2012—primarily from coal-fired power plants. These plants also generate pollutants that contribute to respiratory disease, asthma and acid rain. Hospitals are slowly recognizing that there are alternate means to generate electricity that have less of an impact of human and environmental health. Twenty-one percent of award-winning hospitals used or generated renewable energy for some portion of their energy portfolio in 2013. The median percentage of renewable energy use was 4.2 percent.

TABLE 3: CLIMATE CHANGE STRATEGIES

Renewable Energy Use	All	Small	Large	Top 25	Your Data
Median percentage of the facility's energy portfolio (energy use) from renewable sources	4.2	4.6	3.5	4.6	

Table 4 highlights the hospitals with the highest rates of renewable energy usage for this awards season. An in-depth analysis of energy usage is available in the energy section of the Sustainability Benchmark Report.

TABLE 4: HOSPITALS WITH THE HIGHEST RENEWABLE ENERGY

Facility Name	Percent Renewable Energy	City	State
St. Clare Hospital	28.66	Lakewood	WA
St. Anthony Hospital	31.62	Gig Harbor	WA
St. Elizabeth Hospital- Enumclaw, WA	35.3	Enumclaw	WA
Gundersen Lutheran	36.08	LaCrosse	WI
St. Joseph	37.02	Tacoma	WA
Cooley Dickinson	78.05	Northampton	MA

Alternative Transportation

Transportation comprises 28 percent of U.S. greenhouse gas (GHG) emissions.[1] The majority of greenhouse gas emissions from transportation are CO_2 emissions, a result of combustion of petroleum-based products, like gasoline, in internal combustion engines. Hospitals have a huge workforce—the median number of FTEs for award-winning hospitals was 2,486—each of whom need to get to and from the hospital each day. Hospitals also typically have fleet vehicles, from ambulances and supply trucks, to home health care vehicles and shuttle buses. Table 5 demonstrates that award-winning hospitals continue to make slow but steady progress in this area:

TABLE 5: ALTERNATIVE TRANSPORTATION STRATEGIES

Alternative Transportation Strategies	All	Small	Large	Top 25	Your Data
Does the facility purchase alternative-fueled vehicles for transportation purposes?	33.8	32.0	35.4	40.0	
Does your facility purchase low-emitting and fuel-efficient vehicles for fleet transportation?	28.6	22.0	34.5	40.0	

1   Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012 Accessed on January 23. Available at: http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html

Kaiser Permanente Roseville Green Team with Electric Car

Of the 73 facilities reporting the use of alternative-fueled vehicles, fleet vehicles used the following kinds of fuel:

TABLE 6: TYPE OF FUEL

Type of Fuel	All	Small	Large	Top 25	Your Data
Biodiesel B20-B100	24.7	24.2	25.0	60.0	
Electricity	67.1	60.6	72.5	80.0	
E8 ethanol	20.6	24.2	17.5	30.0	
Hydrogen	1.4	0.0	2.5	0.0	
Natural gas	12.3	12.1	12.5	20.0	
Propane	5.5	0.0	10.0	10.0	

Alternative transportation strategies are a critical part of any comprehensive environmental stewardship program, and integral to any climate mitigation strategy. Practice Greenhealth is in the process of building out resources around alternative transportation.

Tracking GHG Emissions

GHG emissions are typically divided into three classes: scope I, scope II and scope III. Figure 1 differentiates between the three different classes of emissions.

New in 2014, Practice Greenhealth collected GHG emissions from award applicants and designated one climate metric: the total percentage of renewable energy usage within hospitals' energy portfolio. Figure 1 shows the categories of emissions captured broken down by Scope. Table 7 shows the percentage of award-winning hospitals able to report GHG emissions for the different scopes.

The greatest number of award-winners provided scope II emissions, as these are the easiest to quantify. Scope II is composed of purchased energy. Hospitals using ENERGY STAR Portfolio Manager can access an emissions report that captures scope II and some scope I emissions. Scope I and II emissions are primarily attributed to the burning of fossil fuels—with a few exceptions. Not surprisingly, scope III had the fewest respondents. Scope III includes employee commute, waste management and supply chain impact. Of these, we know that the products purchased by the health care sector are a major—if somewhat unknown—contributor to organizational climate impact. Hospitals can likely extract data for business travel miles and waste management practices as a start, with some hand-holding and education.

TABLE 7: GHG EMISSIONS

Percent of the Hospitals that Reported GHG Emissions	All Hospitals
Scope I	37
Scope II	47
Scope III	5

FIGURE 1: COMMON SOURCES OF FEDERAL GREENHOUSE EMISSIONS
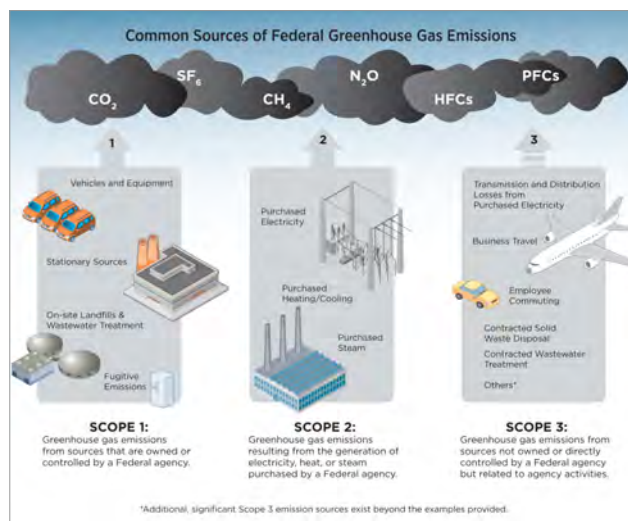
TABLE 8: EMISSIONS

Emission Totals	Metric Tons of CO2e	Percent of Emissions per Scope
Scope 1 Emissions	1,107,739	38
Scope 2 Emissions	1,855,569	64
Scope 3 Emissions	104,205	4

SCOPE I EMISSIONS

Vehicles and Equipment
Stationary Sources
Generators
Combined Heat and Power
Onsite Wastewater Treatment
Onsite Incineration
Fugitive Emissions
Waste Anesthetic Gas Emissions

SCOPE II EMISSIONS

Purchased Electricity
Purchased Heating and Cooling
Purchased Steam
Purchased Chilled Water
Purchased Hot Water

SCOPE III EMISSIONS

Transmission & Distribution Losses
Business Travel
Employee Commuting
Contracted Solid Waste Disposal
Contracted Waste Water Treatment
Vendor Shipping Miles

While Practice Greenhealth is able to share the cumulative carbon emissions for award-winning hospitals, it is important to note that for most hospital applicants this data was incomplete—meaning the estimate is far lower than the actual GHG emissions of these facilities combined.

TABLE 9: CLIMATE DATA

Climate Data Summary	All (in MTCO$_2$E)
Total GHG emissions in CO$_2$e (metric tons)	2,899,629
CO$_2$e savings(metric tons) from GHG emission reduction projects	170,624
Savings (dollars) from GHG emission reduction projects	$1,212,748,682

MTCO$_2$E stands for metric tons of carbon dioxide equivalents. Because there are a myriad of gases that contribute to climate change, it is easiest to understand relative impact by comparing them in terms of carbon dioxide equivalents.

Practice Greenhealth asked award applicants to provide examples of how they were addressing climate change mitigation. It became clear that despite making substantive progress in driving down GHG emissions through other environmental stewardship programs such as energy and waste reduction, there was little awareness of how these programs related to reductions in greenhouse gas emissions. Overall, Practice Greenhealth award applicants had a considerable impact on carbon emissions and should strongly consider highlighting this work in the years ahead.

TABLE 10: CARBON MITIGATION

Sample Programs that Contribute to Carbon Mitigation	Scope	Amount Reduced by Award Winners	Metric Tons of CO$_2$e Reduced
Recycling	III	99,466 tons	318,113
Composting	III	4,762	4,320

(1) Carbon mitigation from recycling is a conservative estimate of savings - if all materials were previously going to landfill, not incinerated.

(2) MCO2e estimates from using the EPA WARM and energy calculator tools.

While climate mitigation work is still in its infancy in health care, the growing evidence that climate change will have significant impacts on human health will be a huge driver for hospitals to become more engaged. The data set from the 2014 awards (2013 data) demonstrates that there is a small but growing awareness and commitment to climate change mitigation. Practice Greenhealth continues to develop new education and training in this important arena.

Green Building

In health care, there is an understanding that the environment of care is integral to healing. But what defines a high-performance healing environment is up to interpretation. Increasingly, hospitals are considering the US Green Building Council's Leadership in Energy and Environmental Design (LEED) certification and other green building rating systems when undertaking new construction or major renovation projects. But there is still a knowledge gap about what the financial "premium" is for green building projects in health care.

Gundersen Health System

> **Memorial Sloan Kettering has introduced the U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) as a way to transform thinking about how our health care treatment facilities and communities are designed, constructed, maintained and operated..**
>
> Memorial Sloan Kettering Cancer Center LEED Policy

The perception is that green buildings cost considerably more to build. The reality is that owners with a strong vision of a healthy, healing environment are finding that the premium is low[1] and the return on investment is high—as these buildings save considerable energy and waste dollars over the life of the building, increase daylighting and views of nature which contribute to patient recovery times and stress levels, and improve recruitment and retention of clinical and support staff.

And while the utilization of green building rating systems is one measure of a healthy building, it doesn't mean all facilities designated "green" actually are green. A "green" building can achieve certification and still have vinyl floors, and use toxic flame retardants and formaldehyde in its components. A "green" building can be built to achieve outstanding energy performance—but is then operated improperly, rendering those investments moot. A "green" building can open its doors and have zero recycling and no focus on healthy foods. Building a green facility and operating it as a sustainable organization are often two separate things—when they should actually go hand-in-hand.

Ensuring the facility utilizes an integrated design team—with representation from a sustainability leader, support services departments and clinicians is critical to building a space that truly works for its occupants. Rating systems are an important tool that can be employed by these teams. And visionary leadership—demanding from the design process a building that meshes with the organization's mission and stewardship goals can make all the difference in what architecture, engineering and design firms are able to deliver—and at what price.

The Practice Greenhealth awards program focuses the majority of its assessment process on *sustainable operations*, but here are the measures for renovations or new construction projects that make an effort to be more sustainable. Some highlights of this year's award winners:

▶ Data shows 38.4 percent of all award-winning hospitals undertook green building projects in the past five years with larger hospitals at 50.4 percent and the Top 25 leading at 68 percent.

▶ Another 46 percent of award-winning hospitals have implemented a policy or commitment to construct all new buildings/renovations to LEED or another green building standard.

▶ Green building projects totaled 15 million square feet for award-winning hospitals, with more than eight million of that square footage achieving some level of LEED certification.

Table 1 highlights the number of facilities reporting LEED certified projects, what level certification they achieved and how many total square feet the projects comprised. Many cities and municipalities have begun to build in requirements to "design to LEED certifiable" standards or achieve certification, including Boston and Washington, D.C.

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1   Guenther, R., Glazer, B., and Vittori, G. LEED Certified Hospitals: Perspectives on Capital Cost Premiums and Operational Benefits. 2013. See more at: http://perkinswill.com/news/study-contradicts-belief-sustainable-hospital-design-costly.html#sthash.DIvX7T14.dpufhttp://perkinswill.com/news/study-contradicts-belief-sustainable-hospital-design-costly.html

TABLE 1: LEED CATAGORIES

LEED Category	Area, in square feet	# of facilities
LEED Platinum	11,848	1
LEED Gold	1,692,423	15
LEED Silver	5,761,183	23
LEED Certified	614,158	4
Total LEED	**8,079,612**	**43**

Standardizing Green Design

Table 2 highlights the commitments that award-winning hospitals are making to the design and construction of sustainable buildings. By building these design principles into the master specifications or contract language, the organization can ensure that these pieces do not get value-engineered out of the project in the design phase.

TABLE 2: GREEN DESIGN AND CONSTRUCTION

Green Design and Construction	All	Small	Large	Top 25	
Has the facility designed and built any green building projects in the past five years?	38.4	24.5	50.4	68.0	
Has the organization integrated any green/sustainable aspects into master specifications for all new buildings/renovations?	54.8	51..0	58.1	72.0	
Has the organization implemented a facility policy or commitment to design and construct all new buildings and/or major renovations to LEED (or another green building) design standard?	46.3	46.5	46.1	72.0	
Has the organization added language to contract specifications that building contractors will follow LEED or GGHC requirements and provide documentation?	42.1	40.6	43.5	60.0	

Although over 80 percent of hospitals reported avoiding "chemicals of concern" in construction, this is potentially an area of opportunity. Avoiding chemicals of concern in building materials, flooring, finishes and cabinetry is an emerging area. Mercury avoidance alone, or targeting one specific chemical or material does not encompass the number of chemicals of concern in building materials and finishes. It is clear that Practice Greenhealth has an opportunity to work with its members to better understand chemical toxicity and the resulting potential health impacts. Table 3 highlights a range of innovative green building elements in place at award-winning hospitals.

TABLE 3: GREEN BUILDING

Innovative Green Building Elements	All	Small	Large	Top 25	
Has the facility installed a green or living roof or wall?	15.7	8.8	21.9	36.0	
Has the facility created a healing garden for patients, visitors or staff?	59.3	50.0	67.2	72.0	
Does the organization have a food or flower-producing garden onsite?	37.3	33.7	40.5	72.0	
Has the facility consciously selected flooring, wall coverings, paints, materials, finishes, furniture or exterior materials that avoid chemicals of concern?	81.9	77.0	86.1	96.0	
Has the facility installed energy systems that exceed ANSI/ASHRAE/IESNA Standard 90.1-2007?	28.2	23.2	32.4	44.0	
Has the facility integrated design elements that will reduce or reuse process water?	27.8	22.4	32.4	40.0	

An additional component of green building is creating healing spaces and using evidence-based design principles. Healing gardens and natural day lighting are examples of ways to contribute to healing environments that have measurable outcomes. They may be considered outside the sustainability purview by some, but Practice Greenhealth understands sustainability blends with healing environments, prevention and wellness and this report is inclusive in capturing what goes into patient and worker experience. Reducing patient stays, as well as staff turnover and sick time has an impact on the sustainability performance of the organization itself.

There are clearly still opportunities for hospitals to increase efficiency on the energy and water side. With only 28 percent of applicants using energy systems that meet or exceed ASHRAE 90.1, and 27.8 percent of facilities using design elements to reduce or reuse process water, these are great areas to focus on. It is critical for hospitals to be able to present a clear and cogent business case for these kinds of improvements.

Construction and Demolition Waste

One of the greatest contributors to landfill waste is bulky construction and demolition debris. For significant construction projects, construction and demolition debris

Healing Garden, Advocate Good Samaritan

(C&D) recycling is win-win. Often, even if the hospital is unaware, the material hauler is recycling this material, due to its value and the cost-savings opportunity for its prevention. Some materials, like certain scrap metals, can generate revenue. Hospitals need to be sure they are building into their contracts that all rebates and revenue from recyclable C&D waste comes back to the organization or offsets the hauling fees.

Despite limited space for onsite segregation of building materials like bricks, cement, wood, metal and ceiling tiles, this cost-effective strategy for reducing landfill waste makes sense for any waste-conscious organization, and should be built into contractor specification language.

TABLE 4: CONSTRUCTION AND DEMOLITION DEBRIS

Construction and Demolition Debris	All	Small	Large	Top 25	
Does the facility recycle construction and demolition debris (C&D)?	75.5	71.0	79.3	88.0	
% of facilities achieving a minimum of 75 percent recycling rate for C&D waste from renovations and new construction	39.6	40.5	38.8	58.3	

Green building continues to be an area of opportunity for many hospitals. Hospitals with a major renovation or replacement project in the near future need to learn how other facilities have achieved LEED-certified hospitals with

little impact on first and considerable impact on long-term operational savings. And from the data above, Practice Greenhealth member hospitals have stories worth sharing.

Benchmarking for Other Inpatient Health Care Institutions

Practice Greenhealth has been benchmarking hospital data for more than a decade. Last year, we introduced two new customized Partner for Change applications for health care institutions without operating rooms, and health care institutions with no overnight beds (outpatient). In this section, Practice Greenhealth presents a small amount of data from the 20 facilities that won 2014 Greenhealth Partner for Change or Greenhealth Emerald awards, and are classified by Practice Greenhealth as "long-term care" facilities. This group consists of skilled nursing facilities, long-term, acute-care hospitals (LTACH), hospice, rehabilitation hospitals, psychiatric and behavioral facilities—and are grouped together because they have overnight beds but no operating suites.

The data set includes facilities ranging from 31 to 366 beds, with a median of 104 beds. All of the facilities are located east of the Mississippi River.

This data set is broken out from the larger acute-care hospital data set because, while these facilities generate many of the same waste streams as acute-care settings, their waste streams are heavily skewed toward hospitality sector wastes—more solid waste, food waste and much less regulated medical waste and hazardous waste. Their recycling opportunities are also somewhat different without operating suites, and they tend to be smaller than acute-care settings, which can have more than 1,000 staffed beds.

Note that this is a *very small data set*. The data is presented below to support benchmarking opportunities, but the data is not statistically significant due to the small size of the data set.

The data is presented in four columns:

Median Value = this is the median value of the hospitals that provided answers to a given question.

Range Minimum = the lowest value that was included in the data set for that question.

Range Maximum = the highest value that was included in the data set for that question.

N = represents the number of data points for a given answer that were considered within an acceptable range after outliers were removed.

TABLE 1: DATA SET BY FACILITY TYPE

Data Set by Facility Type	Sample Size
Skilled nursing facility	10
Long-term acute-care hospital (LTACH)	5
Rehabilitation hospital	2
Psychiatric/behavioral health hospital	1
Hospice	2
Total Data Set	20

CATEGORY		METRIC	Median Value	Range Minimum	Range Maximum	N=
Waste		% Recycling as a percent of total waste	21.8	15.5	52.9	18
		Pounds of total waste per patient day	8.6	2	28.4	19
Food		% Local (<250 miles) and/or organic spend over total food spend	27.5	0.4	54.6	2
		% Spend on healthy beverages over total beverage spend	68	11.1	85.3	10
		% Meat reduction measured by tons of meat per meals served	No facilities reported tracking meat reduction	No facilities reported tracking meat reduction	No facilities reported tracking meat reduction	0
Energy		ENERGY STAR score of (1-100)	81.5	22	90	8
		Energy use intensity (EUI) of (kBtu/square foot)	183	70	335	19
		% EUI improvement	6.7 decrease	19.8 decrease	15.3 increase	12
		% Offsite renewable energy	27.6	27.6	27.6	1
		% Onsite renewable energy	No onsite energy generation	No onsite energy generation	No onsite energy generation	No onsite energy generation
Water		% Water-use reduction in gallons per square foot	9.4 decrease	12.2 percent increase	27.3 decrease	7
		Gallons used per square foot of gross floor area	52.4	11.4	114.6	17
Climate		% Total renewable energy as a % of total energy use	27.6	27.6	27.6	1

Waste

Recycling numbers look strong for these institutions, with a median at nearly 22 percent and a high value over 50 percent. As expected, the total waste pounds per staffed bed per day were much lower than the acute-care hospital data set, presented above, with a median of 8.6 pounds per bed per day (the acute-care hospital average was 28.4 pounds per bed per day). A large part of this discrepancy is due to the huge amount of waste that is generated in operating suites at most hospitals.

Food

Fully half of the facilities have reduction of sugar-sweetened beverages on their radar with an impressive median of 68 percent and best performer's procurement data at 85 percent. In addition, a few facilities have begun tracking the percent of locally purchased and/or sustainable food and are beginning to track the amount of meat per meal served.

Energy

The median ENERGY STAR score was 81.5, almost double the median of 42 for acute-care hospitals. As expected, the median EUI (a measure of total energy used per square foot) for these institutions (183) was considerably less than the median acute-care hospital EUI of 233. While some of these facilities increased their energy use and others decreased their energy use per square foot, the median change was a decrease in energy use of 6.7 percent. While none of the institutions generated energy onsite, one purchased over a quarter of their energy from renewable sources.

Water

Median water consumption was 52.4 gallons per square foot, ranging from 11.4 to 114.6 gallons per square foot. Somewhat surprisingly, this is more than their acute-care counterparts, with a median at 45.3 gallons per square foot. Both data sets had top performers close to 11.5 gallons per square foot. It may make sense next year to ask whether these sites offer dialysis onsite—as that could be responsible for some of the water volume.

For the institutions that provided enough data to track their use water use over time, two showed a moderate increase compared to baseline data; four showed reductions in use ranging from 9.3 to 27.6 percent and one remained constant, varying less than one percent. The median value was 9.3 percent decrease in water use. Collection of this data was not perfect however, as a glitch in the application last year did not allow a baseline year square footage to be entered.

Opposite: Ames Family Hospice House is a 40,000 s.f. 32-bed facility nestled on 30 acres of wooded land. Sustainability, environmental stewardship, economic vitality, and social responsibility are closely aligned with their mission to promote quality of life for current patients and families, and to leave a lasting legacy for future generations.

Conclusion

Summary of Savings

The 2014 Sustainability Benchmark Report captures a year of achievement for Practice Greenhealth award winners. Dedicated leaders from the front lines of health care came together this year to drive environmental stewardship across their organizations—even in the face of a rapidly changing health care landscape. These programs helped create healthier places to work, supported staff engagement, improved operating efficiency, reduced environmental impact and saved money. As hospitals gain a better understanding of how sustainability programs align with their core missions to protect and promote health, they are leveraging their collective purchasing power to drive the supply chain to offer smarter, safer, healthier products and service offerings. Award-winning hospitals spent more than $163 million in 2013 on the handful of environmentally preferable products for which the award application tracks spend. That total doesn't begin to reflect the incredible influence these hospitals are having in driving the creation of a more sustainable supply chain.

Practice Greenhealth Award winners saved more than $111 million dollars last year through their sustainability activities. Table 1 presents a summary of savings achieved by the combined 2014 Award winners. We are incredibly proud of the achievements of our 2014 award-winning hospitals.

TABLE 1: SUMMARY OF SAVINGS

Dollar Savings:	Amount of Waste Prevented	Dollars Saved
Energy	1.85% of energy used	$25 million
Recycling	102,000 tons	$28 million
Total SUD savings and other OR savings (HVAC, kit reformulation)	1,374 tons	$39.1 million
SUD savings outside the OR	228 tons	$17.3 million
Water	275 million gallons saved	$1.1 million
Solvent distillation	136 tons	$540 thousand
Total Savings	**103,378 tons waste** **275 million gallons** **1.85% energy use**	**$111 million**

We're proud to be able to share this data with our membership each year—a bird's eye view of the progress the health care sector is making in addressing its environmental impact as a fundamental determinant of health. We continue to try and improve this report each year to add value to your membership. Please don't hesitate to let us know your thoughts and feedback about ways in which we can improve this report from year to year.

2014 ENVIRONMENTAL EXCELLENCE AWARDS TOP 25 WINNERS

The Top 25 Environmental Excellence Award is now Practice Greenhealth's highest honor for hospitals. Selected from the Greenhealth Partner for Change Awards applications, these 25 hospitals are leading the industry with innovation in sustainability, demonstrating superior programs and illustrating how sustainability is entrenched in their culture. Competition was fierce, with many advanced and innovative programs at member hospitals vying for these 25 spots.

Advocate Christ Medical Center & Advocate Children's Hospital

Advocate Good Samaritan Hospital

Advocate Illinois Masonic Medical Center

Beaumont Hospital, Royal Oak

Bon Secours Baltimore Health System – Bon Secours Hospital

Bon Secours Charity Health System – Bon Secours Community Hospital

Bon Secours Hampton Roads Health System – DePaul Medical Center

Bon Secours Richmond Health System – Bon Secours Richmond Community Hospital

Bon Secours Richmond Health System – Memorial Regional Medical Center

Bon Secours St. Francis Health System – St. Francis Downtown

Bon Secours St. Francis Health System – St. Francis Hospital Eastside

Dartmouth-Hitchcock Medical Center

Fletcher Allen Health Care

Gundersen Health System

Hackensack University Medical Center

Harborview Medical Center

James E Van Zandt VA Medical Center

Littleton Adventist Hospital

Madigan Army Medical Center

Magee-Womens Hospital of UPMC

Metro Health Hospital

Regions Hospital

Ridgeview Medical Center

University of Washington Medical Center

Yale-New Haven Hospital

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